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STEEL

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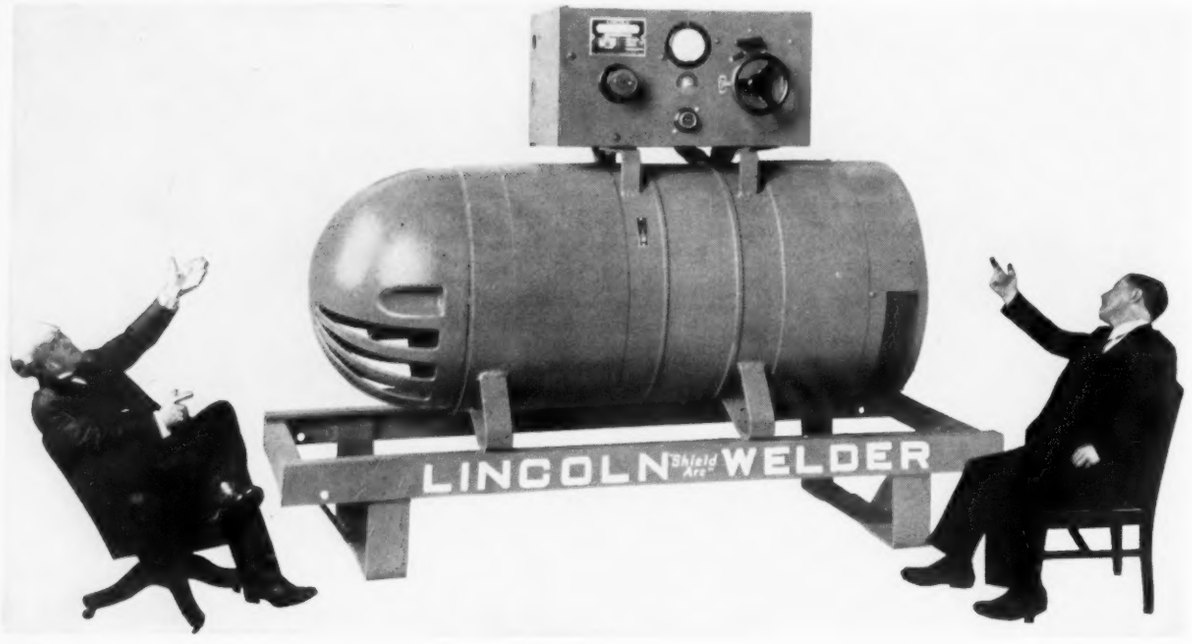
For forty-eight years—IRON TRADE REVIEW

POP AND LAD HAVE THEIR UPS AND DOWNS . . .



"Things are looking *UP* since we put those new Lincoln *'Shield-Arc'* Welders to work.

"I want to emphasize that word *UP* because their faster welding speed has boosted *UP* our production.

"It has also perked *UP* the attitude of the men on the machines now that their individual showing is away *UP*.

"Boy! how those *'Shield-Arc'* welders back *UP* Lincoln's claims and guarantees."

"That's all right, but everything's not on the *UP* side, so let me turn the *UP* side *DOWN:*

"Have you noticed that even in the face of *UP* production the power bills are *DOWN?*

"Have you noticed that the losses at no load are *DOWN* so far you can't find them?

"I'm glad we took *UP* that Lincoln 3-way guarantee which puts *DOWN* in black and white these three cost cutters:

1. More weld metal deposit per K.W.H.
2. Faster welding per K.W.H.
3. Lower cost per unit of welding—the unit being per lineal foot of weld, or per pound of weld metal, or per hour of welding.

"You can write this *DOWN* as a business dehortation: 'Don't buy a welder whose performance is not *definitely* guaranteed'—which means, put your welder specifications *UP* to

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THE LINCOLN ELECTRIC COMPANY, CLEVELAND, OHIO

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W-34

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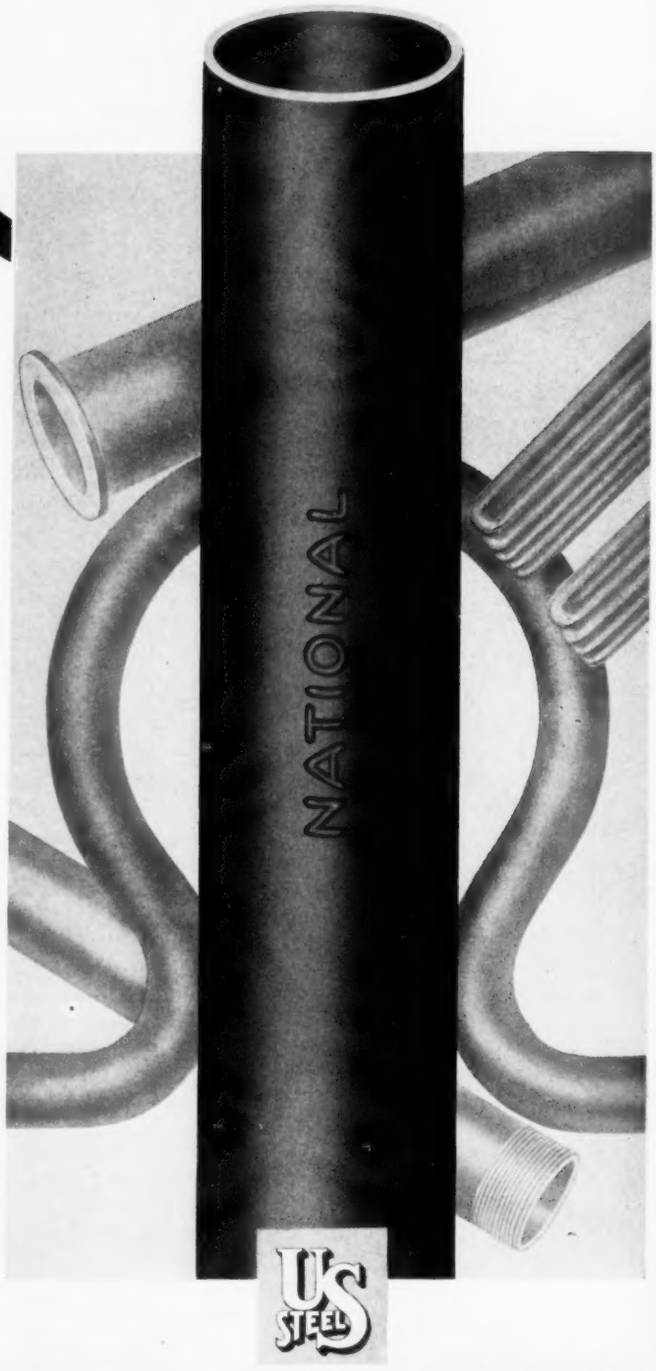
STRENGTH

is only

ONE

of its advantages



IN any case where pressures, vibration, and varying temperatures must be endured by a piping system, strength is indispensable, of course; but strength is not all that is to be considered. Workability is likewise important, where the pipe must stand bending, flanging and coiling.

Corrosion resistance is of undeniable importance, for it will be the measure of strength or life of the pipe as time passes. Adaptability to any form of joint making is a highly desirable quality. A complete range of sizes and wall-thicknesses to meet a wide range of requirements is also of decided value, while the satisfaction that comes from the assurance that each and every length is uniform, thoroughly tested, has passed a rigid inspection and conforms to recognized standard specifications is an advantage that is too important to be overlooked in any piping job.

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NATIONAL PIPE

WELDED OR SEAMLESS

Volume 91 Number 15

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

INCREASED demand for scrap followed by a sharply rising market, forward buying of pig iron, the appearance of numerous small but well-diversified orders for finished material, and now an actual increase in the production of both steel ingots and pig iron are successive links in the chain of evidence that promises to convict the depression and banish it. After declining steadily since February, the daily ingot rate shot up 21.6 per cent in September and the pig iron rate 16.2 per cent (p. 13). Not only did steel recover all the ground lost since May, and iron since June, but both also reinstated the traditional early fall rise missing since 1928. There is neither tonnage nor profit in open hearths and bessemer converters operating at 17 per cent and blast furnaces at 14, but the trend is encouraging.

October Gets Away to a Flying Start

With the steel ingot operating rate up to 19 per cent (p. 55) in the week ended Oct. 8 and five more blast furnaces active than a month ago, October apparently will carry on the improvement of September. . . . As for the past few weeks, demand continues the sum of many small releases (p. 45), although a few commitments reaching tonnage proportions are developing, notably one for upward of 54,000 tons of tin plate (p. 48). This may precede announcement of a downward revision in tin plate prices and insure another increase in the unfilled tonnage of the Steel corporation. . . . More interest is noted by railroads (p. 49), and structural inquiry is broadening (p. 50), though still mostly public work.

Recovery as Universal as Depression

Just as the depression has been world wide, so recovery apears to know no boundaries. London reports (p. 64) that while British producers have tempered their expectations, their trade has been a trifle brisker and export inquiries are broader, especially for sheets and tubes. On the Continent, too, order books are moderately fuller and prices somewhat firmer . . . . When the trade agreement between Canada and England, growing out of the imperial economic conference last July, is announced Thursday (p. 12), British producers undoubtedly will be further heartened.

Europe Vexed by Imports, But Ships to U. S.

Scotch blast furnace interests, distressed by imports of Indian iron (p. 64), can appreciate the feeling of New England sellers on recent heavy imports of European iron. This iron, carrying a declared value of $12.50 per ton at the point of origin (p. 18), has been delivered for as low as $13.75. . . . At Philadelphia as well as Boston, South Manchurian pig iron offered

This 100-foot, 300,000-gallon water tank for Towson, Md., was built by the Chicago Bridge & Iron Works after plans by Eugene Voita, Chicago, who topped a contest to develop aesthetic improvement in elevated tanks

(p. 57) by the Japanese at prices undercutting domestic makers complicates the market situation. Manchurian, Dutch and Indian iron now offer a triple threat on the eastern seaboard.

Scrap Trade Refuses to Cede Market

Sensing in these offerings a menace to their trade, iron and scrap dealers of New England are aroused, and if their investigation (p. 17) confirms their suspicion of dumping they will demand that Washington issue an embargo. . . . As if to pour oil on the troubled waters, the customs bureau at Washington has relented (p. 14) on its order requiring the posting of a bond on all iron and steel imports on which dumping is charged. The bureau also has decreed that steel window frames are structural shapes and dutiable as such. . . . Taking a firm stand for home industry, commissioners at Portland, Oreg., have barred (p. 64) the use of alien steel in a bridge.

"Men Return," Is Front Page News

Confirming an increase in the output of iron and steel, business news is replete with announcement (p. 17) of industrial plants and railroad shops resuming. . . . Further encouragement comes from the department of labor statement (p. 15) that its employment index in August increased over July, and not only that, the improvement was greater than the average of 1926-29 . . . . Twenty thousand men are indebted to the Bethlehem Steel Corp. for part-time employment as a result of its program of sharing work (p. 15). Thus Bethlehem has retained virtually its normal force, has built up employe good will, can expand operations smoothly as increased demand warrants.

3100 Register at National Metal Congress

Lively interest in technical sessions and exhibits of equipment at the fourteenth annual National Metal congress and exposition in Buffalo last week exceeded fondest hopes of exhibitors and the eight engineering groups participating. Registrations exceeded 3100, exhibits numbered 107 (pp. 11, 36). Highlights of the various technical sessions: Long-awaited government survey of the drop forging industry (p. 28) accentuates the problem of overcapacity; improved qualities in medium manganese steels are obtained from a double normalizing treatment (p. 30); correlation of design and production factors in machine tools and equipment is seen (p. 32) as necessary. . . . Proper design of open-hearth furnace (p. 23) calls for detailed information regarding heat flow and temperature gradients through furnace bottoms. . . . An 82-foot cylindrical furnace 6 feet in diameter recently has been installed (p. 27) for copper hydrogen electric welding work.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

The following is an open letter to employes of subsidiary companies of the Bethlehem Steel Corp. from its president, E. G. Grace. It deals with one of the most important problems now before the American public.

THE EDITORS.

The taxes levied today are too great to be carried by industry and by the worker. Between 1929 and 1932 the ratio of the average man's tax to his income has about doubled.

Our company, along with the rest of industry, finds its property tax obligations out of all proportion to wages and other costs of conducting its business.

Our company's tax bill today if available for wages would increase the present employment of 50,000 of our employes by nearly 20 per cent for a year.

The cost of government, local, state and federal, advanced out of all proportion during the years of prosperity, and, unlike other costs, has not yet come down.

As citizens, we have demanded extensions of government services, which have meant an inevitable increase in the tax bill. But much of the cost has been forced upon us, for political purposes. Scores of unnecessary activities have been created. Certain other activities have been extended beyond all reason, resulting in costly bureaucracies.

We now realize that this cost is too large and that it must be greatly reduced by eliminating unnecessary and illogical government services.

The plain fact is that in our public expenditures we are living beyond our means.

Our federal tax burden, large as it is, is exceeded by local and state taxes. Local and state taxes constitute two-thirds of the total tax, and that is the part of the total cost which affects our employes the more directly. This is the field where they should make their greatest efforts to bring about reductions.

Our employes have met these difficult times and curtailed income with courage and loyalty. In business and as individuals we have cut to the bone. Certainly public authorities should be willing to do their part.

We all recognize that it costs money to perform the necessary functions of government. But government is a business and should be run as a business. Moreover, it is our business. We pay for it and select our representatives to run it for us. In other words, as citizens we are the stockholders of our government. As such, we have a right to expect public officials to be as conscientious, efficient and economical in administering governmental affairs as our stockholders expect us to be in administering the affairs of our corporation.

It is encouraging to note that where popular demand has required it, a disposition is now being shown on the part of some public officials to take action. Let us as citizens be sure to co-operate with them. Assist in every way to find how economies can be made and then insist on their accomplishment.

This matter is vital to all of us. In our business and as citizens we cannot continue to pay excessive taxes. The squandering of public funds, as in private business, will lead to bankruptcy. Therefore, to hasten the return of improved business and thus relieve unemployment there is no greater contribution we can make than to assist in every way toward lessening the cost of government.

E. G. GRACE, President,
Bethlehem Steel Corp.

Metal Congress Interest Tops Hopes; Coleman Nominated

WHILE unsatisfactory business conditions again left their mark on the National Metal congress and exposition, conducted at Buffalo Oct. 3-7, the effect was considerably less than was anticipated.

Attendance at the fourteenth annual meeting and show was the smallest in recent years, yet the drop was nowise proportionate to the decline in industrial activity in the past two years. Registration for all societies was over 3100, compared with 3900 last year.

For the most part, the unfavorable influences centered on the exposition, but even here there were 107 exhibits of products by manufacturers, compared with 135 a year ago. It was considered noteworthy that the attendance, both at the exposition and the congress, was widely diversified and by no means largely local.

Societies participating in the week's congress of technical meetings were the American Society for Steel Treating, American Welding society, iron and steel and institute of metals divisions of the American Institute of Mining and Metallurgical Engineers, machine shop practice division of the American Society of Mechanical Engineers, production activity division of the Society of Automotive Engineers, American Drop Forging institute and Wire association. Headquarters of the congress were at Hotel Statler.

A. S. S. T. New Officers Picked

At the annual meeting of the American Society for Steel Treating on Oct. 5 it was announced that William B. Coleman, president, W. B. Coleman & Co., consulting metallurgists, Philadelphia, has been nominated for the office of president. Nomination virtually assures election, therefore Mr. Coleman, who is at present vice president of the society, will assume office Jan. 1, 1933.

W. H. Phillips, vice president, Molybdenum Corp. of America, Pittsburgh, was nominated for vice president for one year. He is a past director of the society.

William H. Eisenman, Cleveland secretary of the society since its organization in 1919, was renominated to the same office for a period of two years.

Directors nominated for a period of two years were R. S. Archer, director of research, A. O. Smith Corp, Milwaukee; and H. G. Keshian, metallurgist, Chase Cos. Inc., Waterbury, Conn.

The foregoing with the 1932 president, A. H. d'Arcambal, sales manager of small tools, Pratt & Whitney Co., Hartford, Conn.; Treasurer A. T. Clarage, president, Columbia Tool Steel Co., Chicago Heights, Ill.; and Directors H. D. McKinney, vice president, Driver-Harris Co., Harrison, N. J., and C. F. Pascoe, metallurgist, Canadian Steel Foundries, Montreal, Que., will constitute the board for 1933.

W. B. Coleman

Nominated for president of American Society for Steel Treating

Following the presentation of formal reports of the officers at the annual meeting, President d'Arcambal awarded the R. M. Bird bell and gavel to the Montreal chapter. This award is made annually to the chapter making the most notable progress in the opinion of the board of directors. During the year the society approved the establishment of a new group in Muncie, Ind., later to become a chapter.

The annual dinner of the society was served on Oct. 6 and at this time the Henry Marion Howe gold medal, awarded annually for the best technical paper published in *Transactions*, was presented to Francis M. Walters, director of the bureau of metallurgical research, Carnegie Institute of Technology, Pittsburgh. The prize winning paper, "Alloys of Iron, Manganese and Carbon," was presented at the Boston convention one year ago, and was published in May, 1932, *Transactions*. Co-authors with Mr. Walters in preparation of the paper were Cyril Wells, M. Gensamer and John F. Eckel, also associated with the bureau.

1933 Congress Not Located

J. M. Watson, metallurgical engineer, Hupp Motor Car Co., Detroit, was presented with the Past President's medal in recognition of his services as president in 1931.

No announcement will be made for some time as to the time and place of the 1933 Metal congress and exposition, pending action of the board

The seventh annual Campbell Memorial lecture was presented on Oct. 5 at conclusion of the annual meeting by Edgar C. Bain, research laboratories, United States Steel Corp., Kearny, N. J. Mr. Bain's selection as 1932 lecturer was in recognition of his extensive and important research work on the composi-

MORE THAN 100 MANUFACTURERS WERE REPRESENTED with exhibits in the National Metal exposition in the 174th Regiment Armory, Buffalo, last week. Although the show was the smallest in recent years, products and equipment covered a wide range and were attractively displayed (see p. 36)

tion and heat treatment of steel. The title of the lecture was "Factors Affecting the Inherent Hardenability of Steel." Although of highly theoretical nature, more than 400 attended.

Throughout the week, the American Society for Steel Treating conducted ten technical sessions dealing with heat treating, deep etch testing, research, forging practice, sheet and strip steel, high speed steels, and corrosion resisting steels. Some of these sessions are reported on page 29 of this issue of STEEL.

The American Welding society conducted seven technical sessions dealing with many phases of welding practice and welded products, also an informal conference devoted to fundamental research. Attendance at the meetings was somewhat smaller than last year. Highlights of early sessions appear on page 30.

For outstanding work performed in the field of structural welding, Frank P. McKibben, president of the American Welding society and consulting engineer for the General Electric Co., Black Gap, Pa., was awarded the Samuel Wylie Miller medal of the society, an annual presentation made for important contributions to welding technology.

Activities of the American Society of Mechanical Engineers and the Society of Automotive Engineers were confined to one day, Oct. 3. The reports of these sessions are to be found on page 32.

Jeffries Talks on Tungsten

Four sessions were arranged on the program of the American Institute of Mining and Metallurgical Engineers, these continuing through Oct. 5 and 6. Dr. Zay Jeffries, consulting engineer, Aluminum Co. of America, Cleveland, addressed the dinner meeting on the first day of the subject of "Tungsten."

New groups participating in the Metal congress for the first time were the American Drop Forging institute and the Wire association. The former met jointly with the A. S. S. T. on the afternoon of Oct. 4 in a session devoted to drop forging practice. Its closing session on the morning of Oct. 5 was spent in discussing the recently completed survey of the drop forging industry made by the department of commerce and in formulating plans for meeting the problems facing the industry. Many important facts were revealed in the survey, a summary of which will be found on page 28.

The Wire association spread its activities over four days with seven sessions. Attendance was good and the discussion of the industry's problems was active. Reports of early sessions are on page 30.

A resume of Metal exposition and new products and equipment displayed is given on page 36.

F. P. McKibben

President, American Welding society, and awarded Samuel Wylie Miller medal of the society for outstanding work in the structural welding field

Vanadium-Colonial Merger Attacked

WASHINGTON—A formal complaint has been issued by the federal trade commission against the Vanadium-Alloys Steel Co., Latrobe, Pa., for its acquisition of the capital stock of the Colonial Steel Co., Pittsburgh, alleging violation of the Clayton act.

The commission, in its complaint, states that "on or about Oct. 30, 1928, the Vanadium Alloys company acquired and now owns the entire authorized and outstanding common (voting) capital stock of the Colonial company."

It is further set forth that each company at that time time was separately engaged in the manufacture and sale of alloy and other forms of steels and in competition with each other.

Charge is made that this is a violation of the Clayton act and that "the effect of such acquisition of said stock or share capital has been and is * * * To substantially lessen competition between the Colonial and the Vanadium-Alloys companies * * * To restrain commerce in the sale of alloy and other forms of steels in certain sections or communities of the United States * * * To tend to create a monopoly in respondent Vanadium-Alloys company in alloy and other forms of steels."

W. H. Phillips

Nominated for vice president of American Society for Steel Treating

Montour Line Gives Valley An Exit to Ohio River

Pittsburgh—A hearing has been in active progress in Beaver county courts the past several days as part of the Pennsylvania railroad's endeavor to prevent the building by the Montour railroad of a 13-mile extension from Negley, Columbiana county, Ohio, to Smiths Ferry, Pa., the latter on the Ohio river.

The Montour railroad has been actively pushing work on the extension with steam shovels, tractors, etc., and has received some carloads of rails for distribution along the proposed line.

Youngstown industrialists are expressing deep interest in the proposed railroad, holding it important to them to get to the Ohio river under likely lower freight rates. In their view, it would mean cheaper coal supplies from Ohio river barging points available to Pittsburgh district coal mine operators, and also affording them a water outlet for their finished steel products for shipment via Ohio river barge lines into the Southwest with its rich oil well supply territories.

Canadian Rates Are Near

Changes in Canadian tariff duties, growing out of the recent Imperial Economic conference at Ottawa, Ont., will be made public simultaneously in Ottawa and London, Oct. 13.

It is expected that while Canada will disclose rates calculated to protect her own growing iron and steel industry, arrangements have beeen made to divert as much of the remaining business as possible to English producers.

Ingot Output up 21.6 Per Cent, Pig Iron 16.2 in September

SEPTEMBER brought the first turn since February in the production of both pig iron and steel ingots, registered an increase over August of 16.2 per cent in pig iron and 21.6 per cent in ingots, and for pig iron retrieved all of the production lost since June, and for ingots since May.

Lending further encouragement, the gain in September over August was the first time since 1928 that the expectation of early fall improvement was realized. The average of 17.34 for ingot operations in September exceeded the most optimistic hopes. Pig iron activity in September developed a two point gain, going to 14 per cent.

Also for the first time since February, an increase was shown in the number of active blast furnace stacks. As of Sept. 30 a total of 46 stacks was in blast, five more than on Aug. 31.

Three-Month Loss Regained by Ingots

PUTTING a decisive stop to the long decline in production of steel ingots, September made a gain of 21.6 per cent over the rate in August, the daily output moving from 30,830 gross tons in August to 37,502 tons in September.

The per cent of operation increased from 14.26 to 17.34, according to figures of the American Iron and Steel institute. This is the first upward movement since February and is sufficient to wipe out the losses of June, July and August.

Although it had one day less than August, September made a total output of 975,061 tons compared with 832,402 tons in August.

For the nine months of 1932 the average daily rate was 43,452 tons and the percentage of operation averaged 20.09. For the same period in 1931 the daily rate was 88,883 tons, or 41.8 per cent.

Pig Iron Tonnage Reverses Long Drop

IN A right-about-face, blast furnace operations broke the long downward slide in September and registered a gain, the first since February, 1932, hailed as a step in beating back to a more normal condition.

Coke pig iron was produced in September at 16.2 per cent better daily rate than in August and 12.4 per cent better total for the month. Five stacks were added to the active list, the first increase in working capacity since February. These gains bring production above the figures for July and August and thus erase the losses of two months.

AVERAGE DAILY PIG IRON PRODUCTION

	1932	1931	1930	1929
Jan.	31,336	55,337	91,573	110,742
Feb.	33,122	61,114	101,640	114,942
Mar.	31,194	65,448	104,930	119,622
Apr.	28,524	66,986	106,371	122,106
May	25,282	64,355	104,564	125,753
June	20,867	54,599	97,817	123,837
July	18,394	47,170	85,110	122,016
Aug.	17,035	41,264	81,455	120,845
Sept.	19,788	38,947	75,893	116,548
Oct.	.....	37,831	69,851	115,747
Nov.	.....	36,727	62,182	106,081
Dec.	.....	31,625	53,732	91,513
Av.	25,023	50,035	86,141	115,808

Average daily production for September was 19,788 tons, a gain of 2753 tons from the 17,035-ton daily average for August, or 16.2 per cent. Relating production to capacity, the operating rate for September was 14 per cent, compared with 12 per cent in August, and 13 per cent in July.

Total production of pig iron in September was 593,640 tons, compared with 528,105 tons in August, a gain of 65,535 tons. September production in 1931 was 1,168,346 tons and in September, 1930, it was 2,276,781 tons. Total production for nine months ending Sept. 30 was 6,856,487 tons, compared with 15,008,033 tons for the corresponding period of 1931, a loss of 8,151,546 tons.

MONTHLY PIG IRON PRODUCTION

	1932	1931	1930
Jan.	971,437	1,715,443	2,838,751
Feb.	960,550	1,711,192	2,845,937
Mar.	967,015	2,028,906	3,252,822
April	855,734	2,009,582	3,191,119
May	783,769	1,995,001	3,241,477
June	626,015	1,637,998	2,934,508
July	570,222	1,462,270	2,638,441
Aug.	528,105	1,279,205	2,525,105
Sept.	593,640	1,168,436	2,276,781
Tot. 9 mos.	6,856,487	15,008,033	25,744,941
Oct.	.....	1,172,781	2,165,374
Nov.	.....	1,101,820	1,865,458
Dec.	.....	980,377	1,665,715
Total	.....	18,263,011	31,441,488

The last day of September 46 blast furnaces were in operation, five more than on Aug. 31. During September nine stacks were put into blast and four were blown out. Merchant stacks gained three and lost one, while nonmerchant stacks gained six and lost three.

Furnaces resuming in September

Steel Ingot Production — 1931-32

95.33 Per Cent of Industry Reporting
Gross Tons

1931	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	No. of working days	Approximate daily output all companies	Per cent operation
Jan.	2,098,175	296,620	2,394,795	2,512,140	27	93,042	43.80
Feb.	2,131,079	296,974	2,428,053	2,547,027	24	106,126	49.96
Mar.	2,565,531	346,137	2,911,688	3,054,339	26	117,475	55.30
Apr.	2,321,043	316,668	2,637,711	2,766,959	26	106,421	50.09
May	2,130,805	301,639	2,432,444	2,551,633	26	98,140	46.20
June	1,782,007	246,365	2,028,372	2,127,762	26	81,837	38.52
July	1,574,379	225,030	1,799,409	1,887,580	26	72,599	34.17
Aug.	1,462,254	174,380	1,636,634	1,716,829	26	66,032	31.08
Sept.	1,274,072	199,151	1,473,223	1,545,411	26	59,439	27.98
9 mos.	17,339,345	2,402,964	19,742,309	20,709,680	233	88,883	41.84
Oct.	1,319,958	195,943	1,515,901	1,590,180	27	58,896	27.72
Nov.	1,276,856	240,441	1,517,297	1,591,644	25	63,666	29.97
Dec.	1,068,384	172,046	1,240,430	1,301,211	26	50,047	23.56
Total	21,004,543	3,011,394	24,015,937	25,192,715	311	81,006	38.13
1932							
Jan.	1,230,661	160,633	1,391,294	1,459,450	26	56,133	25.96
Feb.	1,232,568	157,067	1,389,635	1,457,710	25	58,308	26.96
Mar.	1,149,307	193,944	1,343,251	1,409,054	27	52,187	24.13
Apr.	1,036,227	144,197	1,180,424	1,238,250	26	47,625	22.02
May	950,785	103,593	1,054,378	1,106,030	26	42,540	19.67
June	755,123	100,249	855,372	897,275	26	34,511	15.96
July	652,650	102,872	755,522	792,533	25	31,701	14.66
Aug.	696,206	97,323	793,529	832,402	27	30,830	14.26
Sept.	804,556	124,970	929,526	975,061	26	37,502	17.34
9 mos.	8,508,083	1,184,848	9,692,931	10,167,765	234	43,452	20.09

Figures exclude crucible and electric ingots. Operating percentages for 1931 on capacity of 66,069,570 gross tons as of Dec. 31, 1930; for 1932 on 67,473,630 tons as of Dec. 31, 1931.

were: In Ohio: Republic Steel Corp. Haselton and Trumbull Cliffs: in Kentucky: American Rolling Mill Co., Ashland; in Alabama: Woodward Iron Co., Woodward No. 3; in Pennsylvania: Pittsburgh Steel Co., Monessen; Shenango Furnace Co., Shenango No. 3; Carnegie Steel Co., Farrell; Davison Coke & Iron Co., Neville Island.

Furnaces blowing out or banking were: In Illinois, St. Louis Gas & Coke Corp., Granite City; in Michigan, Ford Motor Co., Benson; in Ohio, Carnegie Steel Co., Ohio No. 2 and Ohio No. 4.

With the Wharton Foundry & Pipe Corp., Phillipsburg, N. J., selling its two Wharton, N. J., blast furnaces to the Bethlehem Steel Co. for dismantling and scrapping (STEEL, Sept. 26, p. 53), the country's total number of potential blast furnaces is reduced from 297 to 295. These furnaces, originally owned by the Wharton Steel Co., sold to the Replogle Steel Co. in 1919 and becoming the property of the Wharton Foundry & Pipe Corp. when this company absorbed the Replogle company in 1924, have not been operated for several years. They had an annual capacity of 360,000 gross tons.

RATE OF BLAST FURNACE OPERATION

(Relation of Production to Capacity)

	1932[1]	1931[2]	1930[3]	1929[4]
January	22.1	38.4	65.0	79.0
February	23.4	42.5	72.1	82.2
March	22.0	45.4	74.5	85.5
April	20.2	46.5	75.4	87.4
May	17.9	44.7	74.2	89.8
June	14.7	37.9	69.3	88.5
July	13.0	32.7	60.3	87.2
August	12.0	28.7	57.8	86.4
September	14.0	27.0	53.8	83.3
October	.....	26.3	49.6	82.6
November	.....	25.5	44.1	75.8
December	.....	22.0	38.1	65.5

[1]Based on capacity of 51,598,175 gross tons Dec. 31, 1931; [2]on capacity of 52,515,875 tons; [3]on capacity of 51,490,680 tons; [4]on capacity of 51,069,895 tons. Capacities by American Iron and Steel institute.

SEPTEMBER IRON PRODUCTION

	No. in blast last day of month Sept.	Aug.	Total tonnage made Merchant	Nonmerchant
Ohio	13	13	31,627	163,885
Penna.	15	10	10,643	142,579*
Alabama	3	2	13,367	13,357
Illinois	4	5	30,148	27,676
New York	2	2	19,818	18,715
Colorado	0	0		
Indiana	4	4		
Maryland	2	2	159	83,004
Virginia	0	0		
Wisconsin	0	0		
Kentucky	1	0		
Mass.	0	0		
Tennessee	0	0		
Utah	1	1	0	38,662
West Va.	1	1		
Michigan	0	1		
Minnesota	0	0		
Missouri	0	0		
Total	46	41	105,762	487,878

*Includes ferromanganese.

Rescind Dumping Bond Order; Business News of Washington

WASHINGTON—The customs bureau has revoked its instruction to collectors a week ago requiring the posting of a bond in connection with importations of iron and steel products, against which a charge of dumping had been lodged, principally by the American Iron and Steel institute.

In a communication to collectors, Commissioner F. X. A. Eble states that "careful examination of the various foreign reports fails to disclose facts sufficient to warrant the issuance of a notice of suspected dumping, hence the withdrawal of the instructions in respect to steel products."

Steel hoops, bands, scroll iron and steel, angles, bars, concrete reinforcing bars, beams, billets, blooms, channels, joists, plates, rods, sheets, shapes, nails and wire netting from Germany, Belgium, France and Luxemburg would have come under the original order.

It is understood that the governments interested were about to make a collective protest to Washington, inasmuch as the detail of posting bond would have effectually checked imports.

It is expected it will be some time before the tariff commission takes any action on the many applications now pending before it for raised duties on iron and steel products as requested by the American Iron and Steel institute.

Not even a preliminary report has been made to the commission by its steel experts to this time. In fact, that division is now swamped with work and this is largely the reason that it will probably be some time before the commission acts on these applications.

The commission has ordered an investigation into the cost of production of cotton ties. Application for an increased duty was filed with the commission several months ago.

Well Over Billion Loaned

Announcement was made last week by the Reconstruction Finance Corp. that from Feb. 2 to Aug. 31 it had loaned $1,182,734,958.02 to commerce, industry and agriculture.

Of this amount, 63 loans aggregating $227,107,147 were authorized to 43 railroads and eight loans aggregating $15,966,245 were authorized to receivers of six railroads.

Special attention is called in the statement that the corporation has agreed to bid for the bonds of Louisiana and the public belt railroad commission of New Orleans in the estimated amount of $13,000,000 for the construction of the public belt bridge at New Orleans, requiring 60,000 tons of steel. Plans for it have been completed, bids for the work have been received and with the assurance of financing, the work may be started in the immediate future, the corporation states.

It is the expectation of the corporation that a number of loans to finance projects to provide low cost housing will be applied for in the near future.

The Corporation announced Oct. 7 that it will purchase $645,620 of revenue bonds of Ogden, Utah, to finance improvements in the water supply, estimated to require 8200 tons cast iron pipe.

The Corporation also has loaned $50,000 to Prescott, Ariz., to complete construction of a dam, estimated to require 70 tons of reinforcing bars.

It will also purchase $5,784,000 of bonds of the middle Rio Grande flood control district for the construction of levees.

No Ford Bid for Old Ships

The shipping board has received proposals for dismantling and scrapping 124 obsolete vessels under two propositions.

Under the first proposition, the successful bidder is required to completely dismantle and scrap the vessels at its expense, the cost not to exceed the amount bid, and the material to be sold at the highest price obtainable, all profits derived from the sale of the material to be divided equally between the bidder and the board.

Bids under this proposition were: Southern Shipyard Corp., Newport News, Va., for 70 vessels at Norfolk, Va., $8.10 per gross ton of recoverable material; Boston Iron & Metal Co., Baltimore, for 124 vessels, at $6 per gross ton of recoverable material; and Sun Shipbuilding & Dry Dock Co., Chester, Pa., for 14 vessels at Philadelphia, $5 per steel ton of recoverable material.

Under the second proposal the successful bidder is required to completely dismantle and scrap the vessels and to pay the board the amount bid based on the recoverable material. These bids were: Sun Shipbuilding & Dry Dock Co., Chester, Pa., $30,000 for the 14 vessels at

(*Please turn to Page* 65)

Shared Work Keeps 20,000 On Bethlehem Payroll

BY DISTRIBUTING work during the depression, Bethlehem Steel Corp. has been enabled to retain on its payrolls more than 20,000 men who would have been without employment under the old plan of wholesale lay-offs.

J. M. Larkin, assistant to the corporation's president, cited this as one result of Bethlehem's plan in dealing with its 50,000 to 60,000 employes, in an address before the Industrial Relations conference, Princeton university, Princeton, N. J., Sept. 22.

From 1921 to 1929 there had been a continuously careful selection of personnel under the direction of President E. G. Grace. As a consequence Bethlehem entered the depression with a picked force.

"Though operations in the steel industry dropped from 100 per cent in May, 1929; to 83 per cent in April, 1930; to 43 per cent in May, 1931; to 24 per cent in January, 1932, and to 13 per cent in July, 1932, by distribution of work our normal force of employes was kept virtually intact," said Mr. Larkin.

"There came a time when some of the extra forces of 1929 and some of the short, unskilled workers could not be carried along, but the great majority of the force has been continued on our rolls even under these adverse conditions."

Aid Extended on Broad Front

At the outset of the depression, President Grace determined to hold an effective force by distributing, or sharing, work among employes, but as it advanced this plan was broadened to include: Extension of credit; emergency employment, or making work to keep men busy; development of employes' gardens; cooperation with community relief agencies; granting a dismissal wage; and advancing pensions.

"Sharing available work among regular employes is applicable, in our opinion, only when it becomes clear that a business recession is of an extended duration," said Mr. Larkin. "In normal times, if one department is shut down for two or three weeks because of a temporary slack in orders, it would not be sound practice to revise the work sheets of other units of an organization.

"The immediate situation appeals strongly for the re-employment of those now out of work. When men start back to work the backbone of this depression will have been broken. Of course, the company which has had the work-sharing plan in effect cannot do much toward reducing the army of the unemployed. It has already done this by the retention of surplus employes. Companies, however, which today have abnormal forces working full time can materially aid the situation by inaugurating such a plan.

"In application we have found that the distributed employment policy has been easier than we anticipated. In our steel plants we have found that the various department superintendents have worked out this problem with amazing efficiency.

"Each plant manager has worked out a very simple means of providing himself with a continuous check on an equitable distribution of the work. This is accomplished by the preparation of a special payroll for each pay period. This readily shows up the high and low earnings of each individual on the payroll. In every department the plan has been followed out equitably.

"In the machine shop, where the work is handled by a group of men representing many skilled crafts that are not easily interchangeable, the administration of shared-work has to be dealt with accordingly. In such a case when a job comes in involving a particular group of machines, one particular crew may be put on for one or two weeks continuous work until the job is finished. Then that crew will be held in reserve for some time and a different crew used on the next job that comes in.

Record of Work Is Public

"Interchangeability is a theory that does not work out in practice in some departments. This is especially true of drafting room work, supervision and some classes of clerical work; but in the main the work can proceed effectively for most jobs under a staggered work plan.

"Even though the staggering of work presents special difficulties in the machine shop and certain other departments, nevertheless a definite schedule is kept in order to assure fairness. The machine shop superintendent, for example, keeps a master book in his desk where there is a record of all his employes. This book, together with control sheets, keeps the number of hours and days worked which each man has to his credit.

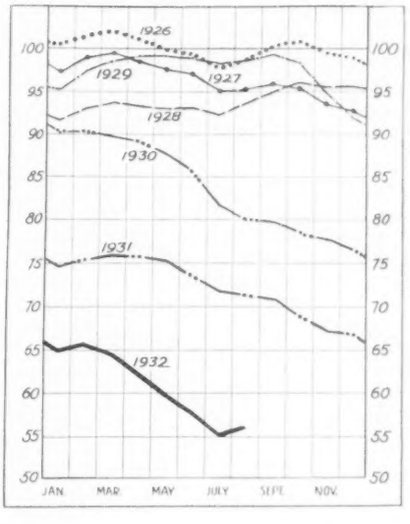
"In the blast furnaces and open hearths, where the various classifications of work are largely repetitive and performed by established gangs on shifts, it is possible to schedule the hours of work of the total force of the department a month in advance. These schedules dividing the work evenly are posted on the bulletin board so that every man may see for himself not only the number of days work which will be available to him, but also the amount of work which is allotted to his fellow employes. This provides a public check on the fairness of the system.

"Not only has the work week been shortened, but the daily working time as well. Maintenance and repair men who normally worked ten hours per day are now working six hours per day. This is also true of some of the rotating shifts, where the three 8-hour turn has been supplanted by a four 6-hour turn."

Employment Index Reverses Trend in August

EMPLOYMENT in manufacturing industries turned upward in August, after declining five consecutive months, according to the department of labor's index.

The department bases its index on 100 for 1926. The index for the full year 1931 was 72.2. For the first eight months of 1932 it was 60.7. In August it was 56.



In each of the seven years, 1926-32, the index stepped up from January to February, a seasonal development. Comparing August with July, there was an increase in 1926, 1927, 1928 and 1929. But in 1930 and 1931 the index was lower in August than in July.

This year, however, reverses the trend. The gain—0.8-point—compares with an average gain of 0.72-point from July to August for the four years 1926-29.

Industrial Men in the Day's News

Charles H. Longfield, General Manager of Sales, Youngstown Sheet & Tube Co.

EIGHTEEN years in the bolt and nut industry is the background for his new post.

HIS business life entirely spent in Cleveland, he now is transferred to Youngstown.

A MAN without a hobby—not even golf—unless intense interest in business can be appraised as such.

CHARLES H. LONGFIELD, appointed general manager of sales for the Youngstown Sheet & Tube Co., Youngstown, O., effects a shift from the consuming side of the iron and steel industry to the producing side.

To his new post, which he assumed last week, he brings a business lifetime of experience in the bolt and nut industry. Few men in this industry have at their command a readier knowledge, and from the viewpoint of sales he also contributes an intimate knowledge.

Born in Cleveland, which has been his home all his business life, he was educated in the public schools there, then attended Indiana university at Bloomington for two years. In 1914 he became associated with the Kirk-Latty Co., Cleveland, rising to sales manager. When the Kirk-Latty Co. was merged into the Lamson & Sessions Co., also of Cleveland, in 1926, he remained with the organization, becoming vice president and director.

DONALD B. GILLIES, president of the Corrigan, McKinney Steel Co., Cleveland, has been elected president of the Newton Steel Co., with plants at Monroe, Mich., and Newton Falls, O., which became affiliated with the Corrigan-McKinney company in August.

E. F. Clark, who has been president of Newton, is now chairman of the board of that company. C. H. Butts has been made vice president in charge of operations, H. E. Robinson vice president in charge of sales, and C. J. Koelsch secretary and treasurer. These three occupied the same positions with the former Newton organization.

Mr. Clark, J. A. Brander and R. T. Wilson were re-elected directors. New directors include Mr. Gillies, J. E. Ferris, S. Livingston Mather and D. T. Croxton, all of Cleveland.

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J. E. Daily, for many years with the Timken Steel & Tube Co., Canton, O., and since July with Wheeling Steel Corp., Wheeling, W. Va., has been named general manager of the Steubenville, O., works of the Wheeling company. He succeeded T. P. Draper, who has resigned on account of ill health.

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George B. Ingersoll, associated for 31 years with the main works of Fairbanks, Morse & Co. at Beloit, Wis., the last 15 years as assistant general manager, retired Oct. 1 at 65, under the company's pension system. He joined the Beloit staff April 29, 1910, and was elected secretary in 1907, being advanced to assistant general manager in 1917.

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Nathaniel B. Wales, internationally known inventor and a pioneer in the domestic refrigeration business, has become associated with the G. M. Basford Co., New York, industrial marketing counselor. He is in charge of engineering and research in the new products development division of the company.

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R. C. Cosgrove, manager, refrigeration division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has also been placed in charge of the company's domestic air conditioning activities.

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Benjamin F. Mohr, for many years assistant to the president of the Illinois Steel Co., Chicago, retired Oct. 8, after almost 42 years of service. In 1891 he entered the accounting department of the Joliet works of the company, nine years later being transferred to the Chicago offices. Shortly afterward he was made assistant to the vice president, and then assistant to the president.

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J. J. Gilmore, district manager of sales at Birmingham, Ala., for the American Steel & Wire Co. and identified with the company 40 years, has retired on account of ill health.

Frank Marmion, for the past three and a half years assistant to Mr. Gilmore, is his successor.

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C. C. Abbott, formerly associated with the Philadelphia office of the Weirton Steel Co., has joined the dis-

trict sales offices of the Alan Wood Steel Co. at 60 East Forty-second street, New York.

L. J. Lieberman, for a number of years with the Wrought Iron Co. of America, Lebanon, Pa., in charge of the ornamental iron department, has become associated with the general sales department of the Wood company at Conshohocken, Pa.

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James A. Farrell, who retired in April as president of the United States Steel Corp., will begin conducting classes in foreign trade at Georgetown university, Washington, beginning Nov. 1.

Employe Training Needed For Accident Prevention

Statistics of recent origin indicate that approximately 98 per cent of accidents in industry today are due to one of the following: Indulgence in nonsafe practices; violation of safety rules; and chance-taking and indifference toward the safety movement. This statement was made by J. A. Voss, safety director, Republic Steel Corp., Youngstown, O., at a meeting of the power press section of the National Safety council during the twenty-first annual safety congress and exposition in Washington, Oct. 3-7.

Mr. Voss pointed out that these statistics emphasize the need for education, training and instruction of employes a job which can be accomplished only in three ways: By a study of the safety requirements of the job itself; by a plan whereby the man is taught how to fulfill the job with the greatest safety and efficiency; and by absolute discipline so that in the course of his training the best and safest way of performing the job becomes an enduring habit with him.

Dr. James H. Greene, Studebaker Corp., South Bend, Ind., speaking before the automotive and machine shop section of the safety congress, urged that during a period of slack employment in an industrial plant special effort be taken to guard the safety of workers.

Aroused by Iron Imports

Boston chapter of the Institute of Scrap Iron and Steel Inc. has directed Benjamin Schwartz, director-general of the institute, New York, to make a study of alleged dumping of foreign pig iron and to file a protest with the treasury department, calling for an embargo on such shipments if it appears that the consumption of scrap is being lessened thereby.

Obituaries

SAMUEL LEWIS SMITH, 65, vice president of the National Malleable & Steel Castings Co., Cleveland, and well-known in railroad supply and foundry circles, died Oct. 6 following a heart attack. Mr. Smith attended Philips Andover school and Yale university. Shortly after graduation he became associated with the National Malleable & Steel Castings Co., of which his father, Stiles Curtis Smith, was one of the founders. In addition to Mr. Smith's activities with the National Malleable company, he was a director of the Union Trust Co., Cleveland, a member of the executive committee of the Railroad Business Men's association, a director of the National Industrial Conference board and a director of Eberhard Mfg. Co., Cleveland. He held memberships in many clubs in Cleveland, New York and Chicago and was active in many civic enterprises in Cleveland.

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Hermann Zitzewitz, founder and head of the National Machine Works, Chicago, died Sept. 23.

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Frank W. Knapp, 67, for almost 40 years representative at Denver for Crane Co., Chicago, until his retirement about a year ago, died Oct. 1.

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John C. Fleming, who was an associate of Andrew Carnegie and one of the partners at the time of the famous "iron clad" agreement, died at Chicago, Oct. 3, at the age of 89. When the Carnegie Steel Co. was merged into the United States Steel Corp. he retired.

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Clarence A. Scott, 55, connected with the Simplex plant of the American Steel Foundries, Chicago, formerly western representative of the Pittsburgh Grinding Machine Co., and brother of George E. Scott, president of the American Steel Foundries, died at Chicago, Sept. 19.

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W. E. Timreck, 47, for the past two years western representative for the National Forge & Ordnance Co., Irvine, Pa., died Sept. 19 at his home in Elmhurst, Ill., a suburb of Chicago. For 13 years Mr. Timreck was associated with the Chicago office of the Denton & Anderson Co., and at one time he was connected with the U. S. Ball Bearing Mfg. Co., Chicago, as purchasing agent. Funeral services were held Sept. 21.

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A. Polhemus Cobb, vice president of the New Jersey Zinc Co. and a pioneer in the development of the American zinc industry, died Oct. 6 at his home in Tarrytown, N. Y., following a long illness. He was 68. Recently Mr. Cobb celebrated the completion of 50 years service with the New Jersey Zinc Co. He also was president and director of the Palmerton Co., Palmerton, N. J., and vice president and director of the Mineral Point Zinc Co., the Empire Zinc Co., Chestnut Ridge Railway Co., and was a director of the Tarrytown National Bank & Trust Co.

Business Is Better

LOCKHART IRON & STEEL CO., Pittsburgh, has resumed on four mills and recalled about 400 employes.

Standard Tin Plate Co., Canonsburg, Pa., recalled 1800 workmen Oct. 3.

A. M. Byers Co. has provided work for 500 men by reopening its plant at Ambridge, Pa.

Baltimore & Ohio Railroad has recalled to its Dubois, Pa., shops about 380 men who have been idle almost two years.

American Sheet & Tin Plate Co., on Oct. 10 was to put back to work about 1050 men at its Laughlin works, Martins Ferry, O.

Atlantic Coast Line has put 750 men back to work at its shops at Rocky Mount, N. C.

Falk Corp., Milwaukee, reports improved bookings, including reduction gears for two destroyers for the navy and 28 pumping gear units for the Superior Oil Co. in the East Texas field.

Wehr Steel Co., Milwaukee, has increased its operations to 18 per cent, due to heavier bookings.

Roots - Connersville - Wilbraham, Connersville, Ind., notes September orders as being 26½ per cent greater than August and 43½ per cent greater than for July. Over September, 1931, the gain this year was 32 per cent.

Bessemer & Lake Erie Railroad has rehired 800 employes at its repair and car shops at Greenville, Pa.

Revenue freight loadings of seven leading western railroads in September were larger than in any preceding month in 1932, according to reports at Chicago, and the decrease from 1931 was the smallest this year.

Simmons Co., Kenosha, Wis., has added 200 men to its payroll and increased its working hours 20 per cent.

A. O. Smith Corp., Milwaukee, recently expanded its toolroom staff by 200, making the present payroll 1800.

Foreign Wire Rope and Pig Iron Harass New England

BOSTON

THE Sacred Cod of Massachusetts offers one of the best remaining outlets for imported wire rope, which sells far below the domestic product. Fishermen at the Boston fish pier almost invariably buy this cheap wire rope at the expense of the local rope, using it for fish trolleys. They buy it in small lots as needed and discard it entirely if the rope fails and the piece goes bad.

The fishermen can do this, but an elevator builder, the operator of a hoist in a granite quarry or most commercial hoisting industries cannot afford to take chances with this rope, and very few do. The seller of foreign rope offers no redress for failure which may be costly in lives and property. The domestic producer does offer a reasonable guarantee of safety. Incidentally, the navy and federal government wire rope specifications have been subject to little or no revision since during the war, and some feel they should be due for some changes.

Wire mills are generally booking 20 to 25 per cent more volume than was the case some weeks back. There has been a pronounced gain in the demand for copper content wire, not copper clad, especially from the railroads. One of the Worcester mills of the American Steel & Wire Co. is now producing a light type of reinforcing bar, a fairly recent development. Most mills making highway rope railing have had a satisfactory season which is holding up better than usual due to protracted highway building.

Ducts Are Stainless Steel

Duct for the ventilation system of the new Boston-East Boston traffic tunnel under Boston harbor is hung from hangers of Rezistal KA2 corrosion resisting steel, probably the first use of its kind for this 18-8 alloy. Crucible Steel Co. of America furnished the bars, 500 of them each 2½ x ½ inches x 6 feet 8 inches. Total weight of the steel bars entering into this tunnel duct hanger system is 16,000 pounds. The fabrication was done by the New England Bolt Co., Everett, Mass.

The bars are screwed into a small hexagon corrosion resisting steel castings, imbedded in the cement wall, the hanger bars being annealed after being upset and forged by the bolt company. Castings are by the General Alloys Co., Boston.

Another interesting use of Rezistal KA2 steel is on the flag-pole atop the building housing radio station WEEI, Boston. A strip of this material, 2 inches wide and ½-inch thick runs the length of the pole, more than 100 feet, parallel to the pole. Along this bar or strip is operated on a pulley a bronze carrier which contains barometer, thermometer and other weather recording instruments from which are read the weather report broadcasts daily.

This corrosion-resisting alloy, exposed to the elements continuously, was white pickled and annealed, the fabrication and erection being done by Babcock & Davis, South Boston.

Buildings Specify More

The use of corrosion resisting steel is growing steadily in New England, with the food industry leading, as in other sections. The first building to have an outside trim of noncorrosive steel is the new department of public works structure, nearing completion at Boston. About 15 tons of strips and sheets were required. A school at Roslindale, Mass., is taking considerable of this alloy for decorative work, including grilles, window casing of No. 24 gage sheets, also two cast eagles of the alloy and other decorative features. The steel on the public building is Tampico finished. The material is also being increasingly used in restaurants, hospitals, and jails. In the jail at Norfolk, Mass., is a table and chair in every cell made of Rezistal KA2 steel.

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Foreign pig iron competition is becoming increasingly severe in New England. At current prices domestic consumers are forced out of the running when price alone is a factor. Some of the old-line New England consumers are reluctant to buy this imported iron, but low prices practically force them to do so.

Some low prices on foreign iron are even a mystery to New England sellers. Several thousand tons of foreign iron were laid down at a Southern New England port some months ago on which a declared valuation of $12.50 a ton at point of origin was made. Some of this has sold at $13.75 delivered in small lots.

On this basis, only $1.25 a ton is the margin for ocean freight, wharfage, unloading, barge or yard storage for several months, reloading to trucks, trucking to buyers' pile, sellers' commission, duty, state property tax and other small charges. These charges, according to conservative estimates, mount to more than $4.

Domestic sellers cannot see how this iron can be sold under $14 delivered, based on a declared valuation of $12.50 a ton at point of origin. Incidentally, pig iron imports in eastern territory, New England, New York, New Jersey and Pennsylvania increased approximately 56 per cent in the first half of this year with shipments of domestic iron sliding off proportionally.

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Oil burner tank fabricators are lending good support to the plate market. Massachusetts laws, unlike those in some states, do not require that oil burner tanks, usually containers of about 275-gallons capacity, be underground. They may be set up on four iron legs in the cellar.

These tanks, fabricated of light plates, one to a tank with head pieces, account for a heavy tonnage recently. The oil-burner demand is heavier and some builders of this type of domestic heater are outrivaling the automobile builders in old days of model changes.

Welding also is increasing in this field. While the tanks take a large part of the steel required in each unit, the burner itself requires a fair volume of plates and small pieces in the aggregate. One eastern plate mill has shipped heavily for these needs, and almost without exception immediate delivery is wanted.

Talks Domestic, Buys Foreign

A mail order house with a chain of stores in New England is advertising "Buy New England," but is a heavy importer of wire, especially barbed, recently importing more than 2000 rolls. . . . A structural steel fabricating shop now liquidating is placing all its plain material on the market at 1.50c, shop, buyer to take it away, but this is much better than some of the importers are doing. . . . Low stocks of standard shapes at structural rolling mills is evident by difficulty of fabricating shops to get prompt delivery on small mixed lots of even regular sizes. Lumped rolling schedules also tend toward delay, as some mills are waiting for fair tonnages before changing rolls for mixed lots of given sizes to warrant a short run. . . . A structural shop which previously had refused to purchase foreign material, unable to get a small lot of desired sizes from stock or by rolling within two weeks, made its first purchase of imported structural material recently. . . . An engineer recently invited bids on a 120-ton structural steel job for Lee, Mass. Seventeen shops bid. Of that number only four were geographically located as logical competitors for this business.

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MIRRORS OF MOTORDOM

DETROIT

RECENTLY the automobile industry has been making final decisions on the design and specifications of 1933 models, taking prices on materials and notifying parts and material suppliers of their percentage allotments, meanwhile growing exuberant and despondent, alternately, with the fluctuations of the stock market.

Now the industry is making an actual start on production. The failure of general business to come back fast and in a big way following the initial recovery of the stock market has had a sobering effect, and output the remainder of this year will be more rigidly restricted to dealer and show requirements than seemed probable in the early fall.

But there is no diminution of the underlying conviction that the industry is heading into a broader market. The recent gain in retail sales, while slight, points to the lid on demand being a very light one. It appears probable that 1932 assembly of passenger cars and trucks will approximate 1,500,000 units; the least estimate heard in Detroit for 1933 is 2,000,000.

General Motors Resuming

Chevrolet last Monday reopened its forging division in Detroit, is casting its new engines at Saginaw, and has scheduled other departments for resumption shortly. While the Chevrolet body will be sharply differentiated from Pontiac, Olds and Buick, it too will show the influence of streamlining and will be much lower hung.

Buick has resumed in some departments and by next Monday expects to be operating in all. This division of General Motors probably will be first to introduce its new line, possibly in November, with Chevrolet probably second. Olds, however, probably will not be far behind with more radical redesign than any General Motors unit.

On Sept. 30 Chrysler took inventory in all divisions, last week apprised material suppliers of their allotments, and almost daily is expected to issue releases. Four hundred "pilot" cars of the new Plymouth six have been assembled, but volume production of it and the new Dodge line has been retarded, partially by the business situation.

Chrysler Shifting Engines

While some refinements are in process, it is generally stated that the present DeSoto six engine is being shifted to Plymouth, the current Dodge six engine will power the new DeSoto, while a new engine has been designed for Dodge.

It may be prophetic that Henry Dreyfuss, industrial and stage designer, apostle of the teardrop body and a worker in steel, is creating a display for Plymouth at the New York and Chicago shows that will be more of a novelty than the working model of an automobile factory which Chrysler featured last year.

Some believe that it may be difficult to determine whether Chrysler or General Motors, of the large producers, ventures the farthest in 1933 models in streamlining.

Studebaker's final decision on plans for 1933 includes in at least one model the recently-mentioned departure whereby the trunk housing is incorporated in the stamping for the rear.

The new light Willys will go as far as any of its competitors in streamlining, its coupe presenting a pronounced rake in the rear.

While first purchases of material for the new Continental-DeVaux car, probably to be christened the Frontenac, are for 5000 units, the first year's program is said to involve 30,000. This new car probably will not be shown until January. It now appears that it will be assembled in the Durant plant at Lansing. Arrangements have been made with Dominion Motors Ltd., Toronto, for Canadian production.

The increasing appearance of disorganization at Ford is becoming a matter of much concern to Detroit. In the process of farming out parts business, some steel specialists of many years employment have been dismissed. The new $4 a day minimum for 8 hours cuts the city's purchasing power appreciably.

Current Ford production is not much over 1500 units daily, 3 days a week, or at the rate of 20,000 units monthly. While there are many reports of Ford changes in design, the truth probably is that, as usual, there is no program. However, improvements in the eight and a revision of the smaller car and a reduction in its price are logical.

Taking Ingots from Stock

At this time all of the Ford ten open-hearth steel furnaces are down, not having been operated since the shutdown in August. At the Great Lakes division of the National Steel Corp. two out of six open hearths are active, giving this district an operating ratio of 12½ per cent. However, finishing steel production is larger than this figure indicates, as Great Lakes is taking ingots off its stock pile.

An important manufacturer of automobile wheels in Detroit is understood to be ready to embark upon the production of bicycles, with 100,000 for a Chicago mail order house scheduled. An entirely new design of bicycle is claimed. The tires will be balloons, carrying 16 pounds pressure. This cushioning permits the front fork to be perpendicular. A V-type belt, of the automobile fan type, will replace the conventional chain.

A Detroit manufacturer of tubing is considering entering the cold drawing and finishing field.

EDITORIAL

Who Benefits from Profitless Building Construction

SO MUCH has been said and written about the benefits to be derived from the construction of public buildings and other "self-liquidating" projects that it may be well to look into a few of these cases for the purpose of determining who is benefited. Unfortunately, one cannot go far in such an investigation without being convinced that a highly perfected form of racketeering exists in the building industry which bars fabricators, suppliers of material, employers, employes and others from benefits to which they are entitled.

The situation is not new. It has been attacked by architects, fabricators, professional organizations and trade associations for many years. Two decades ago a prominent general contractor revealed the system when he described his method of preparing a general bid on a building.

His practice was to deduct 10 per cent from the low bids of his numerous sub-contractors. He had learned a new trick in purchasing materials and he promptly applied it to every class of sub-contractor. He derived his profit from pitting one sub-contractor against another until he had obtained what he believed was the lowest possible price. Other general contractors adopted the method in self defense. They found that their only chance of securing a general contract was to out-guess their competitors as to the amount that could be whipsawed out of the sub-contractors.

Whipsawing of Sub-Contractors Leaves Broad Trail of Red Ink

In the early stages of the development of this racket, general contractors were able to operate at a profit, but now the abuses have become so flagrant that the situation is chaotic. Instead of deducting 10 per cent from sub-contractors some general contractors now attempt to discount sub-bids by as much as 20 or 30 per cent.

On a $5,000,000 postoffice job awarded within the past year the contractor is estimated to have made $500,000 by "chiseling" sub-contracts before construction work was started. Examples of similar racketeering are to be found in almost every locality.

However, the system does not always work to the advantage of the contractor. On a recent job in the east, a general contractor estimated that the amount he could squeeze out of his sub-contractors would be $140,000. Actually he succeeded in paring down sub-bids by only $50,000. Consequently he assumed a loss of $90,000.

What happens to sub-contractors who take work under this system? When fabricated structural steel goes for as low as $38 per ton, as it has in a number of instances, the amount left for shop costs is whittled down to about 46 cents per 100 pounds. This ridiculously inadequate rate can mean only losses, which breed wage cuts, shortcuts and dissatisfaction and threaten bankruptcy. Similar disheartening results are visited upon other sub-contractors.

Racketeering May Easily Defeat Purpose of Timely Public Works Construction

It will be argued that a large building, bridge, water system or other engineering project awarded at this time will help to push the wheels of business off dead center. In theory this is true, but in practice the project—no matter how gigantic it may be—is of practically no advantage to anyone in the immediate present if participation in its planning, design, fabrication and erection involves losses rather than profits.

The fact that many of the monumental structures of the country erected during the past few years or now under construction represent losses for many of those who furnished, fabricated or erected the material is a challenge to the entire building industry. The problem of correcting conditions is squarely up to the various groups of architects, engineers, contractors, steelmakers, steel constructors and the industries represented by other subcontractors.

These interests are thoroughly alive to the situation. Through the recently formed Construction League of the United States, they are attempting to get to the root of present evils. One step being considered is to make it mandatory for general contractors to name in their bids the sub-contractors who will participate on each job. Other suggestions call for provisions to be sponsored by the league to which all participants would agree, with suitable penalties for violations.

During the past few years there has been no lack of interest in this major problem. However, progress has been slow owing to the fact that individual problems of the interested parties have demanded more than usual attention. Fortunately the job-making and order-producing features of present public work projects will help to focus public attention upon the alarming aspects of building racketeering, and this in turn should provide impetus for real action.

THE BUSINESS TREND

Business Record Improves; Sentiment Restrained

MONTHLY figures for September, now becoming available, tend to confirm the rather indefinite signs of weekly reports that business is moving slowly and moderately upward. Bradstreet's monthly index of wholesale commodity prices for Oct. 1 showed a gain, the fourth in succession. Pig iron output in September was decisively above that of August. Steel ingot production and unfilled orders of the United States Steel Corp will be higher.

In the main other barometers, including freight car loadings, electric power output and the banking situation, continue favorable. Nevertheless, in spite of the faint improvement generally that is reflected in these reports, business sentiment still exhibits a marked degree of restraint. In some quarters there is disappointment over the slow pace of recovery.

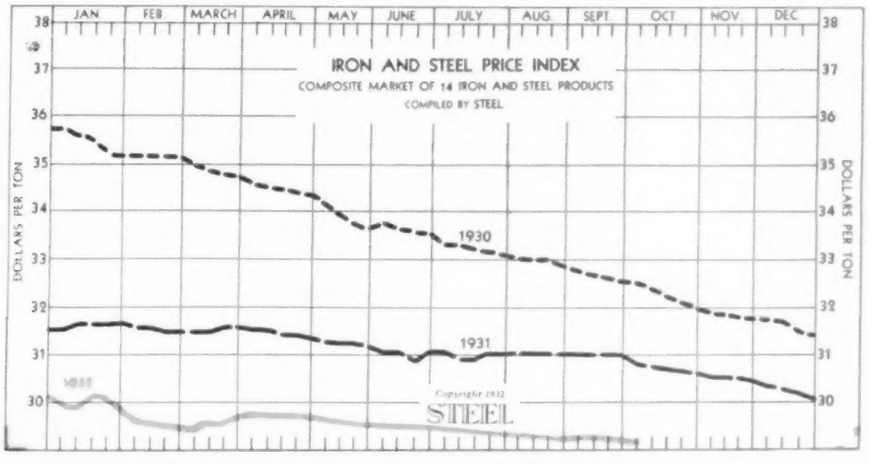
On the other hand is a gradually widening realization of the gigantic task that is embraced in the struggle for business improvement. The importance of putting the country's financial house in order now appears clearer in retrospect than it did in the first half of 1932, when the financial situation was more acute.

Recovery really is measured by the condition of business establishments. At the present time a small number of concerns are in a position to begin to think in terms of business expansion rather than of continued retrenchment. As more companies reach this point, the pace of recovery will increase. For those institutions that by virtue of good management have completed the job of tearing down and are now ready to rebuild, the future seems secure. But for those that must still go backward before they can hope to go ahead, the next six months will be a critical period.

Gains Thus Far Emanate From Small, Independent Orders

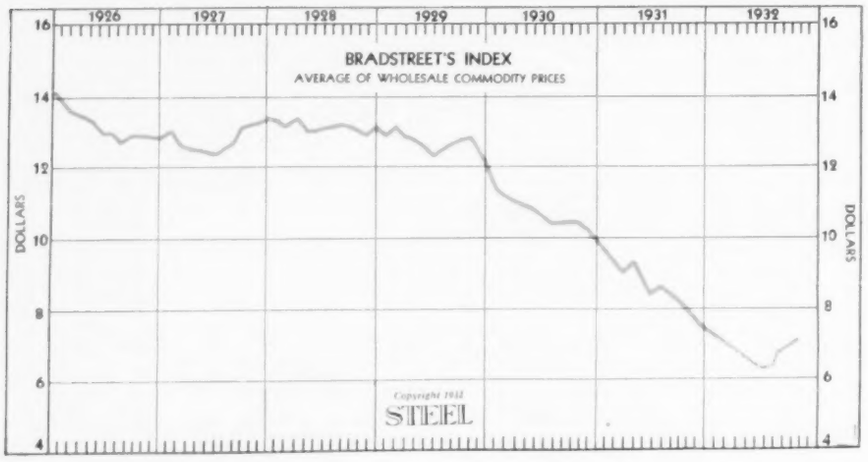
One of the favorable aspects of the present situation is that the minor gains registered thus far are due to a great number of small, independent orders and not to massed business from concentrated sources. The aid of the R. F. C. is just beginning to be translated into employment and orders for material. Buying through the railroad equipment financing agency has barely started. In the main the benefits of these and other powerful national movements still lie largely in the future.

Much of the work done in the past six months has been of preparatory nature. This is true of individual and company activities as well as of national activity. From now on, efforts can be focused more directly upon the job of rebuilding.



1932	
Oct. 1	$29.32
Sept. 24	29.32
Sept. 17	**29.32**
Sept. 10	29.32
Sept. 3	29.32

1931	
Sept. 30	$31.02
Sept. 23	31.02
Sept. 16	**31.02**
Sept. 9	31.04
Sept. 2	31.04



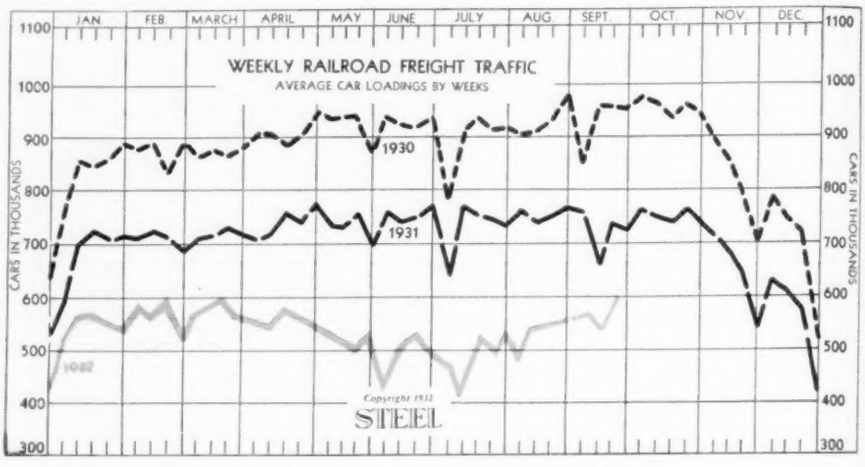
	1932	1931
October 1	$7.27	$8.29
September 1	7.17	8.49
August 1	6.79	8.79

Commodity Prices Continue To Show Gain

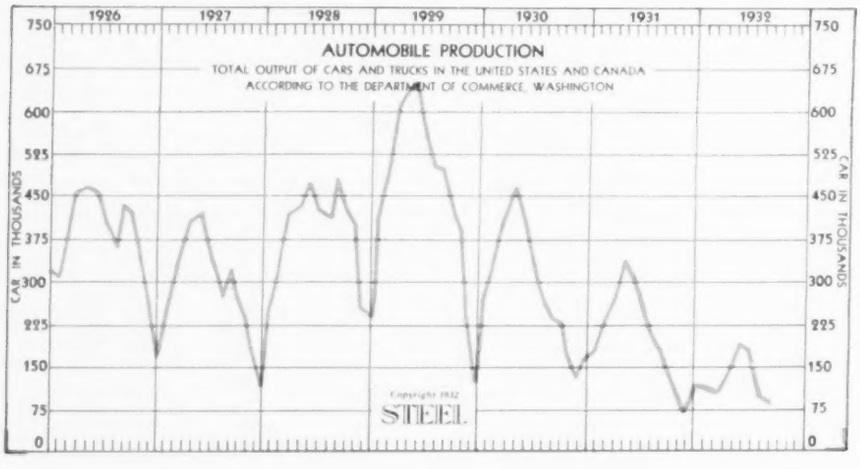
For the fourth consecutive month, Bradstreets' price index of wholesale commodities continues to show an upward movement. On Oct. 1, the index stood at $7.27, compared to $7.17 a month ago. Last year on Oct. 1 the index registered $8.29. Among the individual commodities, the outstanding increase during September was in domestic wool, which was 10 cents a pound to 45 cents. Net declines occurred in corn and cotton.

Freight Traffic Continues Upward Movement

Loading of revenue freight for the week ended Sept. 24 totaled 595,746 cars, the highest for any one week so far this year, according to reports of the American Railway association. The total for the week was an increase of 8444 cars above the preceding week, but was 142,290 cars below the same week in 1931 and 354,917 cars under the same week two years ago. Coal loading contributed largely to the current rise with an increase of 6350 cars.



	1932	1931
September 24	595,746	738,036
September 17	587,302	742,614
September 10	501,903	667,829



August, 1932	94,391
July, 1932	118,613
August, 1931	191,741

Automobile Output Declines During August

With a decline of 24,222 cars during August, the trend in automobile production dropped to the lowest point this year. According to the monthly report of the United States department of commerce, August production totaled 94,391 passenger cars and trucks, 4,067 of which were produced in Canada. This compares with 118,613 cars in July and 191,741 during August last year. Total output for the 8 months aggregate 1,123,096 units, compared to 2,053,478 for the same period last year.

Table IV

Average Flow Values of Various Heat Retardents

Group	A	B	C			D	E	F			G		H	I	J
Temperature, degrees Fahr.	Molten Slag	Molten Steel	Ground Magnesite	Brick Magnesite	Brick Chrome	Brick Silica	Brick Fire	Insulating Brick	Insulating Concrete	Sand	Ore	Silicon Carbide	Steel plate	Air
	150	500	21	20	18	1						52		
2700-3100	0.007	0.002	0.047	0.050	0.055	.....	.....	.....	.....	.....	.....	0.019	.....	.....
			22	22	20	14	11					48		
2300-2700	.....	.....	0.045	0.045	0.05	0.071	0.091	.....	.....	.....	.....	0.021	.....	.....
			23	24	22	13	10	1.6				44		
1900-2300	.....	.....	0.043	0.042	0.045	0.077	0.100	0.625	.....	.....	.....	0.023	.....	.....
				26	24	12	8	1.4	2.8					
1500-1900	.....	.....	.....	0.038	0.042	0.083	0.111	0.714	0.357	.....	.....	0.025	.....	.....
				28		10.5	8	1.2	2.6					
1100-1500	.....	.....	.....	0.036	.....	0.095	0.125	0.833	0.385	.....	.....	.....	.....	.....
						9	7	1.0	2.4	6	10		300	
700-1100	.....	.....	.....	.....	.....	0.111	0.142	1.00	0.417	0.166	0.100	.....	0.003	.....
						8	6	0.8	2.2	6	10		300	4.00
300- 700	.....	.....	.....	.....	.....	0.125	0.166	1.25	0.454	0.166	0.100	.....	0.003	0.25
									2.0	6	10		300	2.50
300	.....	.....	.....	.....	.....	.....	.....	.....	0.500	0.166	0.100	.....	0.003	0.40

Upper figures are K (B.t.u. per square foot per degree temperature difference between surfaces per 1 inch thickness, per hour). Lower figures are $1 \div k$.

IMPROVING OPEN-HEARTH FURNACE DESIGN

By WILLIAM C. BUELL JR.

Part I—Bottoms

COMPUTING the heat flow and temperature gradients through open-hearth furnace bottoms is tedious inasmuch as materials of varying heat flow properties ordinarily are employed, necessitating an integrated method of calculation. This evaluated information is, however, most essential to the proper analyses of these bottoms for study.

An attempt to simplify these calculations includes:

(a) The grouping of certain of the materials that are used with similar purpose, whose coefficients are nearly the same, and assigning a coefficient to the group that will be representative at the average temperature conditions under which they are actually used. By assigning an average coefficient to the simple materials that may be used singly and whose coefficients are unsimilar to others.

(b) The use of McMillan's simplified equation as a basis of calculation for heat flow and temperature gradients.

(c) The development of curves for the graphic determinations of the temperature of the cooler surfaces of the bottoms and the heat loss therethrough.

(d) The development of curves for the graphic determination of the surface temperature of the metal and slag of the bath.

Item a: Examination of existing data will show a considerable variation of the values of similar materials as offered by various authorities on heat transmission rates. In order that the basic data, upon which the calculations are to be made, may be taken without question, data have been assembled from various authentic sources and from these data have been selected or averaged values that should be representtive for the practice under discussion.

These values for the materials commonly used are given in Table IV. Materials listed under C, F and G, usually are employed adjacent to each other, temperature conditions ordinarily are similar, the heat flow values are nearly alike, and, accordingly, it is reasonable to consider them as units where heat flow values only without individual temperature gradients are required. Their use in this manner greatly simplifies calculation, but, of course, where temperature gradients through the individual material are necessary the group method will not serve.

Simplifying Heat Flow Data

In all heat flow calculations that are to be discussed, the coefficients of flow values assigned to the various materials are for one inch thickness of the material. In most cases materials of several inches of thickness are used and consequently the coefficient is divided into the thickness to find the total resistance offered by a material of given thickness. In order to make calculations involving these values somewhat easier, the reciprocals of the coefficients are given in the table.

Item b: In his paper on heat transfer, McMillan* modifies the ordinary equation for series heat flow through several different materials to include the gaseous adjacent fluids on both the hotter and cooler surfaces as

$$u = \frac{t_o - t_a}{\frac{1}{C_1} + \frac{x_1}{k_1} + \frac{x_2}{k_2} + \frac{x_3}{k_3} \cdots + \frac{1}{C_2}} \quad (1)$$

in which

U Overall rate of heat transfer in B.t.u. per square foot per hour.

t_o Temperature of the hotter gases.

t_a Temperature of the surrounding air.

C_1 In the case of furnaces, the rate

*"Heat Transfer Through Insulation in the Moderate and High-Temperature Fields; A Statement of Existing Data," by L. B. McMillan, presented at meeting of A. S. M. E., Dec. 1926.

of heat transfer from the furnace gases to the hotter surface of the refractory. For the requirements of this study it is unnecessary to consider the rate of heat transfer from the gaseous source to the surface of the slag and consequently no mention of this is made.

C_2 Rate of heat transfer from the cooler surface of the insulation to the atmosphere. The rate of heat transfer from the cooler surface to the air is shown by the emission curve in Fig. 4. This varies from 2.3 at 150 degrees Fahr. temperature difference to 4.85 at 500 degrees. This is the rate usually ascribed to still air. On account of the bottom grillage system this is probably a correct method as far as the bottoms are concerned.

k Conductivity of any material in B.t.u. per square foot per degree temperature difference between surfaces per 1 inch thickness per hour.

x Thickness of material in inches.

If the temperature between $\frac{1}{C_1}$ and $\frac{x_1}{k_1}$ be known or assumed, then the value $\frac{1}{C_1}$ may be ommitted from the equation. In all of the following calculations the temperature of the inner surface of the ground magnesite is taken as 2900 degrees Fahr.

The solution of $\frac{x}{k}$ may be tedious if a number of calculations are to be made, so consequently there has been a chart prepared based on the group system by which $\frac{x}{k}$ may be read directly within the limits that will be encountered. This is given in Fig. 3.

The evaluated term $\frac{x}{k}$ is the measure of the resistance of the particular material of any given thickness to the flow of heat. For simplification it is designed as r (resistance).

By the same reasoning $\frac{x_1}{k_1} + \frac{x_2}{k_2}$

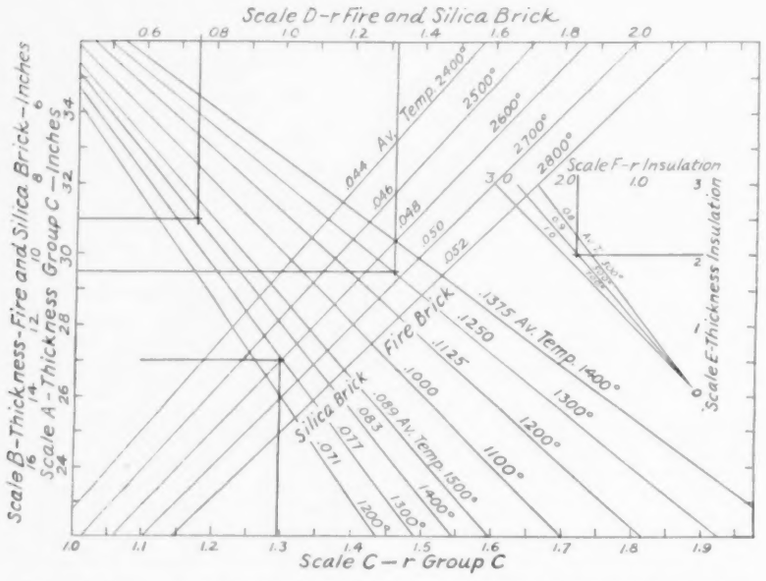


Fig. 3—Values of r (resistance) for various metals at average temperatures

etc., which give the measure of several refractories in series are designated collectively as R (combined resistance).

The use of the chart (Fig. 3) is of particular interest when it is desired to find quickly the combined resistance R for any open-hearth furnace bottom. For example, assume a bottom of ground magnesite, magnesite brick and chrome brick, (Group C) 27 inches thick, fire brick 10½ inches thick and insulation 2 inches thick. What will be the combined resistance R?

Reading from scale A at 27 inches to the line .048-2600 degrees, the latter being assumed as the median temperature of the group C refractories, and vertically downward to scale C the figure 1.295 is the resistance r for these materials.

In the same manner, the resistance of the firebrick is found by entering at scale B, 10½ inches to the diagonal 1.250 — 1300 degrees to scale D, r=1.26.

Next, the resistance of the insulation is found from 2 inches scale E, line 0.9 — 500 degrees to scale F, r=1.80.

The sum of the three, 4.355 is the combined resistance R of the entire bottom.

Item C: Based on a combined resistance R, an assumption of the hotter surface of the ground magnesite and a surrounding air temperature of 100 degrees, a chart, Fig. 4, has been prepared from which the temperature of the cooler surface may be read directly and the rate of heat dissipation through the bottom and to the air found.

To use this chart enter scale A with the combined resistance R and project a line horizontally to the curve of temperature of the hotter surface. A line extended vertically will give the temperature of the cooler surface on scale B, while a horizontal line from the intersection of the projected vertical line and the emission curve to scale D will give the emission rate, the temperature difference between the air and the cooler surface of the insulation being shown on scale C.

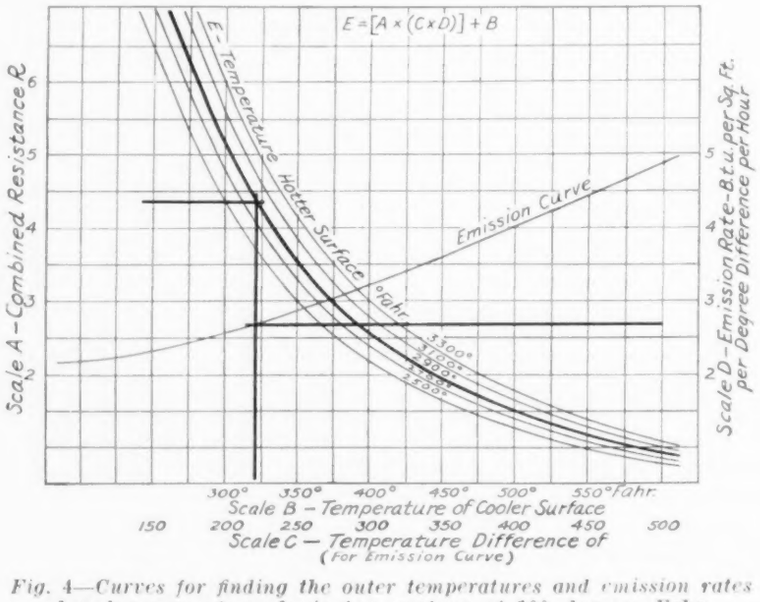


Fig. 4—Curves for finding the outer temperatures and emission rates based on an atmospheric temperature of 100 degrees Fahr.

Continuing the prior example: Enter scale A at 4.355 and extend horizontally to the line of the hotter surface,

2900 degrees. Dropping vertically from this intersection the value 322 degrees is found on scale B. This is the temperature of the cooler surface of the insulation. If from where this vertical line intersects the emission curve, a horizontal line is extended to scale D the figure 2.70 is found. This is the emission rate in B.t.u. per square foot per degree difference per hour.

If 2.70 is multiplied by the temperature difference of 222 degrees (322 — 100 degrees) as found on scale C, giving 599, this latter figure is the total heat in B.t.u. passing through the bottom per square foot of surface per hour.

The figure of 2900 degrees as representing the temperature of the surface of the ground magnesite where it is in contact with the bath is taken as representative of tonnage steel practice, it being about the lowest temperature at which 0.10 to 0.15 per cent carbon steel can be tapped. Higher carbon steels may be tapped at a somewhat lower temperature, ingot iron somewhat higher, but 2900 degrees is considered to be a fair average.

Item d: In beginning heat flow calculations from the adjacent surfaces of ground magnestie and the molten steel it is simple to work backward and determine the upper surface temperature of the bath as a function of the heat flow through the bottom.

Finding Surface Temperature

Under these conditions, a chart, Fig. 5 has been developed. Its use is shown by a typical example, a continuation of the foregoing problem as follows: Heat flow through the bottom 599 (600) B.t.u. per hour. Thickness of metal in bath 30 inches, thickness of slag 6 inches. What is the temperature drop through both metal and slag and what is the surface temperature of the slag? Enter scale A (Fig. 5) at 600 and draw a horizontal line to intersect the *K* lines of metal and slag, in this case taken as 500 and 150 respectively. From the intersection, draw a vertical line to intersect the depth lines of both metal and slag, and, from these intersections, extend horizontal lines to scale B. Reading on scale B it will be seen that the temperature drop through the 30 inch metal bath is 36 degrees and through the 6 inch slag is 24 degrees Fahr. Accordingly, if the temperature at the junction of steel and magnesite is 2900 degrees the temperature of the surface of the bath will be 2900+36+24 or 2960 degrees Fahr.

The use of this method assumes that the coefficients are constant at the temperature range of 2500 to 3300 degrees Fahr. While this is probably not true, the differences in any event are so slight as to make any error from this source negligible.

This method presupposes a virtually quiet bath and, accordingly, it must be considered as representing the bath temperature after the conclusion of the lime boil and prior to tapping and during which period the bath temperature actually reaches its maximum

In all the examples considered, the depth of slag covering the bath is taken as 6 inches and the depth of metal as the furnace designer's depth of bath from the foreplate level to the top ground magnesite, less the 6 inches assumed depth of slag.

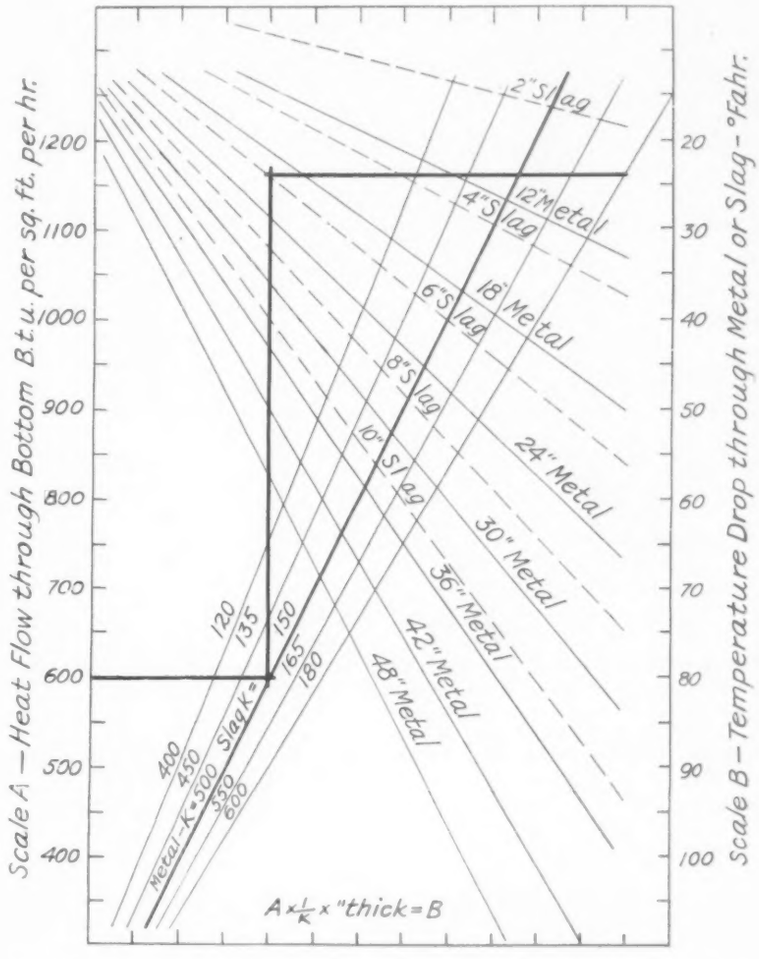


Fig. 5—Differential of temperature through molten steel or slag as a function of heat flow through bottoms

Given the temperature of the surface of the bath and the heat flow therethrough, the average temperature of the flame or furnace gases necessary to accomplish this heat flow may be estimated with a fair degree of accuracy by the use of the chart shown in Fig. 6. In using this chart, the effect of the velocity of the flame or the furnace gases must be considered. Usually the velocities are from 1.5 to 3.0 feet per second as at 32 degrees Fahr. The data required for the use of this chart is the heat flow value through the bottom, that of the surface temperature of the slag and an estimate of the hot gas velocity.

As an example, a continuation of the prior example will serve In this the heat flow through the bottom has been found as 600 B.t.u., and the slag surface temperature 2960 degrees Fahr. Assume the gas velocity as 2.5 feet per second. Enter scale A at 600 and draw a horizontal line to intersect the *B* velocity line of 2.5 feet per second. From this intersection erect a line vertically to the curve of the emission rate, *K*, and from this last intersection extend a line horizontally to scale D, reading thereon 170 degrees, which if added to the slag surface temperature, 2960 degrees, gives the total of 3130 degrees Fahr. as the minimum average gas temperature necessary to satisfy the bottom radiation requirements. If the gas velocity was assumed as 1.5 feet per second, then the temperature *D* would be 190 degrees, making the necessary minimum flame temperature 3150 degrees Fahr.

This chart shows rather clearly the increase of heat transfer accruing from an increased gas velocity. It also depicts conclusively an added value of lowering the heat flow through the bottom by an improved refractory practice.

From subsequent data it will be shown that the bottom of furnace G passes 1150 B.t.u. per square foot per hour, and that the temperature of the

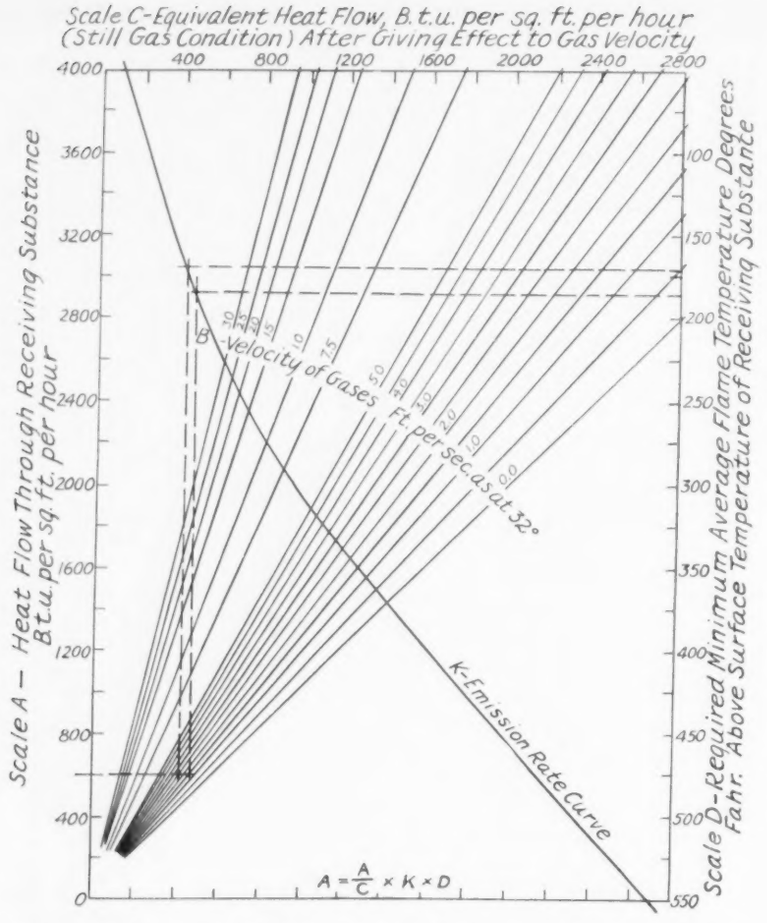


Fig. 6—Chart showing relations of heat flow through receiving substance and flame velocity to the temperature difference between them

slag surface is recorded as 3015 degrees Fahr.

By the use of Fig. 6 it may be found that with 2.5 foot gas velocity the minimum flame temperature will be 270+3015 or 3285 degrees Fahr. and with a 1.5-foot velocity 290+3015 or 3305 degrees Fahr. These increases of 153 degrees respectively of temperature over those of the 600 B.t.u. bottom naturally mean a much higher fuel rate and/or a longer time of heat as well as an added cost of refractories

More Heat Needed for Bath

It must not be taken from the foregoing that the making of steel can be accomplished at the flame temperatures just mentioned. These are necessary to supply the radiation requirements of the bottom only. Any work to be done by heat chemically or physically or the superheating of the bath, must be carried on by heat delivered into the bath at temperatures in excess of those noted. Or, if the increase of temperature cannot be secured or maintained, then the time of heat must be lengthened.

The steel plate forming the bottom is considered to offer no resistance to the flow of heat While this assumption is incorrect, the maxmum temperature drop through the bottom plate was found to be less than 4 degrees Fahr. which is so small as to be unworthy of notation.

(To be continued)

Giant Hangar Has All-Welded Floors

WHEN the new naval airship hangar, at Sunnyvale, Calif., is completed, more than 7 miles of welding will have gone into its construction. The dimensions of this giant structure, which is to house the new navy dirigible MACON, will be approximately 1200 feet in length by 308 feet in width by 225 in height. Not only will this hangar be one of the largest buildings in the world, but it is said to be the largest building in the world without pillars or posts to support it. The hangar, which will be in the shape of a enormous elongated archway, will have a single unobstructed floor area of nearly 300,000 square feet, a space large enough to house 5 miles of freight cars.

The laying of the sheet steel battledeck mezzanine floors which run the entire length of the building, one on each side, is by far the largest job of structural welding ever performed in California. The floors consist of steel plates 12 by 2 feet, 3/16-inch thick, welded together. The splices between the ends of the plates are welded butt-strap joints, as are the longitudinal joints, except that in the latter case, the top flange of supporting 3-inch I-beams serves as the strap. The 3-inch I-beams are in turn welded to 20-inch I-beams. All the welds of the floor plates are continuous and are ground flush with the top surface after being completed. Welding of the I-beams and splice plates underneath the floor is done by means of a traveling scaffold of welded pipe construction.

The welding work is being done by the Brown Brothers Welding Co., San Francisco, on a subcontract from the Wallace Bridge & Structural Steel Co. for welding the mezzanine floors and for welding all field connections where welding is required. The welding equipment being used on the job includes motor-driven and gas engine-driven electric welding machines, built by General Electric Co., Schenectady, N. Y.

High-Temperature Tests Of Metals Conducted

High-temperature tests on manganese-carbon steel, cast nickel-chromium-iron alloys, a series of tungsten-chromium-vanadium steels and a series of molybdenum-chromium-vanadium steels have been conducted by scientists of the bureau of standards, Washington, in an effort to determine the behavior of metals under extreme temperatures.

Commercial value of these tests, which are being conducted periodically, is almost incalculable to industry, it has been pointed out. Metallurgists and engineers in recent years have become thoroughly aware of the fact that much remains to be learned of the properties and behavior of metals at peak temperatures, largely because modern power plants, petroleum refineries, chemical engineering plants, and many other modern industries must rely upon the dependable service of metals at relatively high temperatures.

The problem of the laboratory is to obtain sufficiently dependable data on the strength of metals at high levels of temperature for the designing engineer. It is not a simple problem, largely because the strength of metals at elevated temperatures involves a time factor. That is to say, a metal which appears to be sufficiently strong and rigid when tested by rapid loading at a certain high temperature mark, may fail to carry the load at a lower mark if it is allowed to maintain this load over a longer period of time. Complicated machines have been developed to compensate for the time factor.

Detroit Plant Installs New Copper Hydrogen Furnace

IN COPPER hydrogen electric welding, any number of steel parts having several joints can be welded together simultaneously. The parts are fitted closely together, copper powder or copper wire is laid around the joints and the article is passed through an electric furnace which is kept at a temperature somewhat higher than the melting point of copper and in which a reducing atmosphere is maintained constantly.

The steel surface is thoroughly deoxidized first, then the copper melts and flows over the steel and into the joints. Next, the iron and copper alloy, some of the copper goes in solid solution in the steel, and some of the iron is dissolved by the copper to produce an integral alloy bond between the parts to be welded. After this the article is cooled, also in a reducing atmosphere, thus preserving a clean steel surface, and the copper solidifies to give a strong weld.

Aiding the copper to flow completely through the joint to make the continuous gas-tight weld are the mutual affinity of copper for iron and of iron for copper, capillary attraction, the uniform temperature of the steel, and the deoxidized condition of the steel surface.

The Bundy Tubing Co., Detroit, which for some time has specialized in copper hydrogen electric welding, recently installed a new furnace designed by the General Electric Co., Schenectady, N. Y., particularly for handling multiwelds and intricate assemblies. This furnace is shown in the illustration below.

It is of the semicontinuous pusher-type and is completely automatic. The entire unit is built in a steel shell 6 feet in diameter and approximately 82 feet long, the first 20 feet being the heating chamber, which is bricked in the shell and the next 60 feet the cooler, which is jacketed for water cooling. To minimize heat losses in the cooler, the heating chamber and the cooler are connected by a rectangular throat which is built of fire brick and insulation. The dimensions of the throat limit the size of the work which can be sent through the furnace to 17 x 13 x 30 inches.

Resistors on Walls, Floor

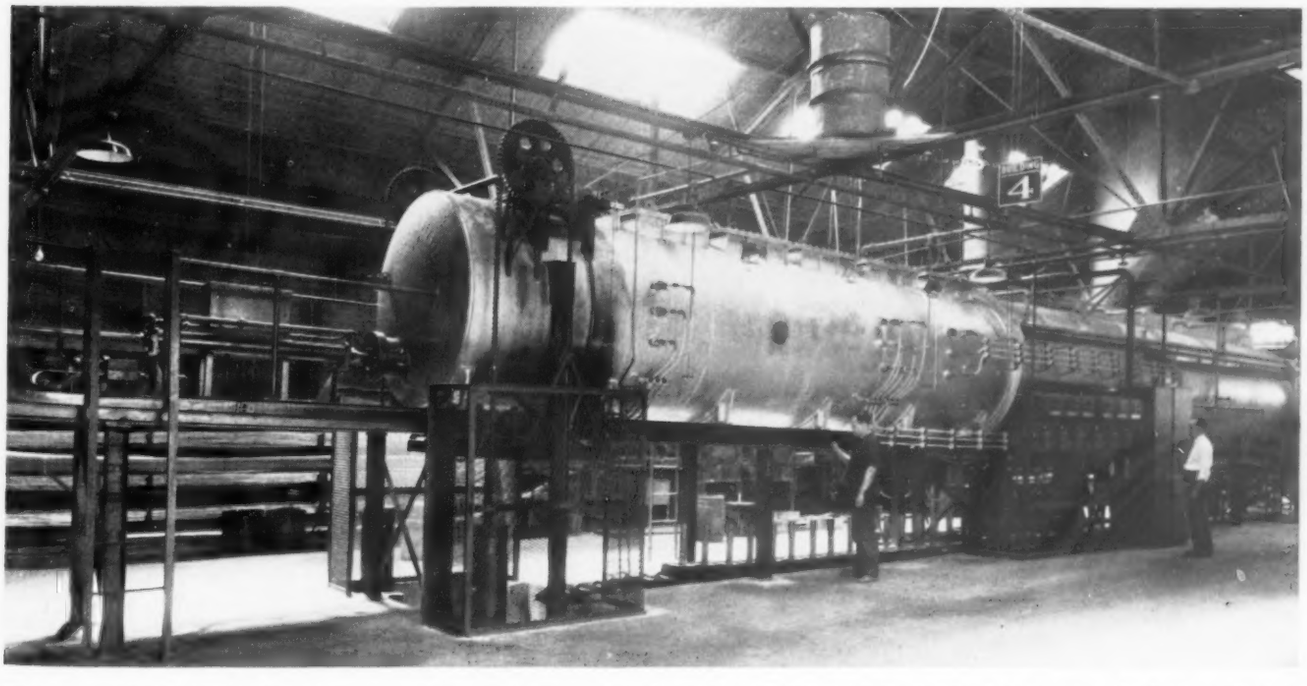
The reducing gas is fed into the heating chamber at a point near the throat and flows out through the charging and discharging openings at both ends of the furnace. Nichrome ribbon resistors are mounted in loops on the side walls and on the floor of the heating chamber.

Work is carried on cars 2 feet long, which are loaded on a lower conveyor running underneath the length of the furnace, and are pushed through the furnace on another double track disk-wheel alloy conveyor in a lower temperature chamber built beneath the floor of the heating chamber. The work is brought into the heat zone on supports which extend up from the cars through a longitudinal opening in the floor of the heating chamber.

An elevator at each end of the furnace brings the cars to the level of the upper and lower conveyors, and hydraulic pushers alternately move the train of cars on the conveyors one car length, and push the last car onto the charging or discharging elevator.

Copper hydrogen welding is said to produce results unobtainable by any other welding method, such as gas-tight joints, good heat conductivity through the joints, ductility and strength. Because of the relatively high temperature of the process, the steel is annealed thoroughly, is free from localized strains, and has clean inside and outside surfaces free from scales and oxides. Furthermore, because of the high melting point of the welding metal, the steel can be heat treated, or can be used at elevated temperatures without affecting the welds.

Articles which can be welded in a furnace of this type are said to be almost unlimited. For instance, parts of most intricate designs can be made economically and simply by assembling separate stampings of proper design and copper welding them in the hydrogen electric furnace. The process is particularly adapted for the automotive and mechanical refrigeration industries.



This unusually large semicontinuous pusher-type furnace has been installed in a Detroit plant for copper hydrogen electric welding of intricate assemblies. It is completely automatic and is approximately 82 feet long with a shell 6 feet in diameter

Survey Reveals Overcapacity Of Drop Forging Industry

IF THE 1931 single-shift capacity of 182 representative drop forging plants were to be completely utilized at the present time, production would have to be at a rate of about 70 per cent over the supposedly peak level of 1929. Thus, in 1931, production in these plants was 21 per cent of capacity and in 1929, 58 per cent of capacity, indicating the condition which exists today—that of tremendous overcapacity with excessive idle equipment, much of which has outlived its period of usefulness despite still being capable of operation. These startling figures were revealed for the first time before members of the American Drop Forging institute, meeting in Buffalo, Oct. 5; being a part of a recently completed survey of production and capacity in the drop forging industry, made at the solicitation of the institute, by the department of commerce, Washington, in co-operation with drop forging plants.

The survey, only released Oct. 5, pointed out that the relationship between production and capacity is one of the basic economic problems facing American business today. It is substantially more than a problem of production. Paradoxical though it may seem, many of the effects of this relationship are most apparent in the field of distribution. To a marked degree companies consciously or unconsciously predicate fundamental sales policies upon the relationship between their production and capacity. Prices and terms of sale are directly related to the amount of idle equipment. Similarly, the type of business sought, the interpretation of the requirements for an acceptable credit risk, as well as general seling practices tend to be affected by this fundamental relationship.

Remarkable Growth Noted

The present century has witnessed a phenomenal growth in the drop forging industry. The value added by manufacture for plants engaged primarily in the production of commercial forgings was $5,512,494 in 1899. The corresponding figure in 1929 was $84,641,983. Thus, the value added by manufacture increased more than 1400 per cent within the relatively short span of 30 years. This percentage increase is more than double that which occurred for the entire manufacturing industries of the United States.

To obtain a comprehensive picture of the industry it was necessary to include three types of plants in the study—commercial, semicommercial and noncommercial. By commercial plants are meant those selling all drop forgings manufactured. Semicommercial plants include those producing some drop forgings for sale and some incidental to the manufacture of a more final product, while noncommercial plants are those using their entire drop forging output in the manufacture of a more final product in their respective plants.

By consultation with builders of drop forging equipment a mailing list of 1633 companies was drawn up and questionnaires sent to them. The response was excellent, 830 indicating that they did not manufacture drop forgings, 400 reported being out of business or merged with another concern on the mailing list, 266 submitting detailed replies to the questionnaire, 56 reporting only a negligible quantity of forgings manufactured, 41 unable to supply figures, and no replies received from 40. This amounted to a 97 per cent response and is one of the reasons for the great value attached to the survey.

Details of Questionnaire

Details requested in the survey grouped themselves into two classes—production and capacity. Under the former were: Types of drop forgings manufactured; annual tonnage production; and annual tonnage production of commercial drop forgings. Under the latter heading were: Investment in factory assets; types of machinery; hours of work; and tonnage capacity

Tabulations of the survey show that in terms of number of plants, the noncommercial shops are the most numerous; over 50 per cent of the total are of this type. The smallest group comprises the semicommercial establishments, numbering a little over 20 per cent of the total; the remainder being commercial shops. Importance of each of the three types with respect to tonnage produced was exactly inverse to their importance in terms of numbers. Production in 1930 of 244 reporting companies was about 508,000 tons, of which semicommercial shops produced about 40 per cent, commercial shops about 35 per cent and noncommercial shops about 20 per cent. Considering this production geographically it was found that the east north central states, including Illinois, Indiana, Wisconsin, Michigan and Ohio, with about 40 per cent of the total number of plants reporting, produced over 60 per cent of the total tonnage for 1930.

Turning to the matter of plant size it is revealed that approximately two-thirds of the entire drop forging tonnage was accounted for by plants with a 1930 output of 5000 tons or more; these plants represent only about 12 per cent of the total number. If this group is widened to include all plants with a 1930 production in excess of 2000 tons, it is seen that only about 25 per cent of the total number of plants is accounted for, as contrasted with over 85 per cent of the total tonnage output.

Segregating production into types of forgings produced, the fact is brought out that needs of the automotive industry account for about two thirds of the entire drop forging tonnage; agricultural implements about 7 per cent; railroads about 6 per cent; machinery about 5 per cent; motors and engines about 1.5 per cent; airplanes about 1 per cent; and miscellaneous about 13 per cent. Inasmuch as the automotive industry is the principal consumer of drop forgings, it is likely that the precipitous growth of the forging industry can be attributed in a substantial degree to the amazing expansion of the automotive industry since the turn of the century. Furthermore, it might be postulated that the present depressed condition of the automotive industry is immediately reflected in the low rate of production in the drop forging plants.

The survey throws interesting light on the factor of specialization in forging production. Nearly 60 per cent of the reporting plants entirely confine their activities to the production of one type of product. About 13 per cent restrict production to two types. Thus, the operations of more than 70 per cent of the establishments are confined to not more than two classes of products. This trend is partially accounted for by the fact that in the classification of noncommercial plants nearly 90 per cent produce only one type of forging.

Increase Equipment Purchases

During the three-year period 1928-31 the survey reveals a persistent upward trend in machinery and equipment investment by 175 manufacturers reporting. The 1928 investment by these forging manufacturers was approximately $35,500,000; the comparable figure for 1929 was about $39,800,000; and for 1930 approximately $41,200,000. This indicates that despite a steady falling off in available business, forging manufacturers proceeded with new machines and equipment, appreciably expanding production facilities. Further compilation of data on the subject of machinery, from the standpoint of number of forging hammers, discloses a similar steady increase in the combined number of board and drop hammers. Total number of hammers in 241 reporting plants for 1928, 1929 and 1930 were respectively 3007, 3097 and 3147. This increase was by no means typical of both board and steam ham-

mers, the latter type having remained about constant in number over the three-year period, while a substantial increase was registered in the number of board hammers. This upward trend was characteristic not only of hammers but also of upsetters, being more pronounced in the latter case, amounting to about 10 per cent.

Of course these are only a few of the highlights of this comprehensive 146-page survey. Weeks of careful study will be required by any reader to digest thoroughly and interpret accurately the widespread mass of data presented. However, it is only by such careful study of data relating to production and capacity that the progressive drop forging manufacturer can gage successfully his opportunities and obligations. The survey should prove a valuable aid to constructive economic planning in the drop forging industry.

Sounds Call for Leaders

Before presenting details of the survey, Charles H. Smith, president of the American Drop Forging institute, set forth what he termed "industry's challenge to the trade association," in which he cited industry's need for greater leadership, men of vision, courage and good sense. As an example of this movement Mr. Smith mentioned the recent appointment of Robert P. Lamont, former secretary of commerce, to the post of presidency of the American Iron and Steel institute, explaining that "with Mr. Lamont's qualifications as an industrial leader and the experience gained as secretary of commerce, he will furnish the iron and steel institute a clearer vision into the proper relationship between industry and government and will prove a valuable asset to the steel industry as a whole, in the interest of stabilization."

"Incidentally," Mr. Smith continued, "many of you no doubt already have felt the effect of the recent plan of the steel industry in its attempt to work out some of its problems by devising the plan of marketing whereby it will not sell to a drop forging company commercial quality steel, and guarantee that it will be forgeable, above certain sizes. On the larger sizes there will be certain extra charges graded on a basis of sizes of steel.

"To my mind such a plan will not prove to be to the best interest of the steel or the drop forging industry and it will encourage the adoption of bootleg methods which will defeat the main object in the minds of the steel executives.

"It is my hope that through the newly created atmosphere in the offices of the iron and steel institute someone will see the fallacy of such a program as is now being attempted and, in turn, work out an arrangement that will be equitable to all, instead of the present plan, which discriminates against commercial forge companies.

"It would be better if the steel manufacturers, in their attempt to solve some of their problems, would give some thought and attention in the development of definite and uniform standards of quality for all materials that they manufacture, and then permit the purchaser to choose his requirements with a full knowledge of what he can expect to receive. This plan will give greater stabilization in the steel and forging industries."

Discuss Manganese Steels and Effects of Furnace Scaling

EARLY research work with medium manganese steel led to the belief that such steels were brittle to work and that they did not have sufficient toughness for commercial application. However, a considerable tonnage of this steel is used in the fabrication of rails, high-strength seamless tubing and in high-strength castings. The metallographic structure of these steels "as-rolled" is rather coarse and the low single blow impact values obtained are to be anticipated. In consideration of these factors, C. R. Austin, section engineer, alloys and process section, metallurgical division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., carried out a brief research on medium manganese steel, and presented his results before the American Society for Steel Treating in Buffalo, Oct. 3.

Double Normalizing Effective

Mr. Austin's work was carried out with the idea of determining the best combination of mechanical properties of medium manganese steels, having the composition of 0.42 per cent carbon and 1.57 per cent manganese, which can be obtained by some simple normalizing treatment; as well as demonstrating the superiority in such properties of a properly normalized steel over the same material put into service in the "as-rolled" condition.

After preliminary experiments with simple normalizing treatments at various temperatures, the conclusion was reached that a better metallographic structure would be obtained by double normalizing—a primary normalizing at 775-900 degrees Cent., followed by a secondary normalizing treatment at 735-750 degrees Cent. The structure desired was one showing an elimination of banded structure, the presence of little free ferrite and a uniform but fine grain. The double normalizing treatment produced these results, giving further a marked improvement over single normalizing in both impact and resistance to fatigue. Tensile yield compared with the "as-rolled" condition was raised from 68,000 to 78,000 pounds per square inch. Izod impact values similarly were raised from 4.5 to nearly 30 foot-pounds.

Discussing Mr. Austin's work, Jerome Strauss, Vanadium Corp. of America, New York, pointed out that improved physical properties in medium manganese steel might be obtained with a modified analysis, such as: Carbon 0.40, manganese 1.20, chromium 0.35 and vanadium 0.10 per cent. Practical examples of the advantages of the double normalizing or "conditioning" of the medium manganese steel in the manufacture of gears and pinions were outlined by Norman Waldman, Westinghouse Electric & Mfg. Co.

Turning to another phase of steel behavior, the relative scaling effects of atmospheres of air, carbon monoxide, carbon dioxide and water vapor on S.A.E. 1015 steel over the temperature range 1000 to 2000 degrees Fahr. were considered in a paper by Clair Upthegrove and D. W. Murphy, departments of chemical engineering and engineering research, respectively, University of Michigan, Ann Arbor, Mich. Mr. Murphy pointed out that scaling does not increase regularly with increase in temperature in the simple atmosphere, air, oxygen and carbon dioxide.

Retardation Detected

A maximum and a minimum point are observed for carbon dioxide at 1400 and 1520 degrees Fahr. and for air at 1800 and 2000 degrees Fahr. These investigators also noted a definite retardation in the rate of scaling in oxygen at 1800 degrees Fahr., the temperature at which blistering first becomes noticeable in both air and oxygen. For temperatures below 1700 degrees Fahr., little scale is produced by combustion atmospheres carrying 4 or more per cent of carbon monoxide.

In heating gears, pinions and small springs in the above mentioned

temperature range, a method for maintaining a combustion atmosphere rich in carbon monoxide was described by Mr. Waldman. This was accomplished by placing a quantity of spent carburizing compound on the hearth of the furnace immediately behind the furnace door, and resulted in a 50 per cent reduction in scaling. Accomplishing the same end by introducing hydrocarbon gas into the atmosphere in the furnace was suggested by R. J. Cowan, metallurgist, Surface Combustion Corp., Toledo, O.

Age Hardening of Castings

Descending the temperature scale into the subcritical range, results of research made into the effect of quenching a low-carbon cast steel from below the Ac_1 point, followed by age hardening at various temperatures and for various lengths of time, were explained by Charles W. Briggs, Naval Research Laboratory, Anacostia, D. C., who showed that important changes in physical properties could be effected by this treatment. The method was termed by Mr. Briggs a "low internal stress heat treatment" since the maximum temperature was still below the critical point and thus involved no expansion or contraction. The effect is similarly produced in the age hardening of such materials as duralumin.

In the work several series of cast steels, 0.25 per cent carbon, were heated to temperatures ranging from 600 to 680 degrees Cent., quenched in water and aged at 100 degrees Cent., 50 degrees Cent. and at room temperature for predetermined lengths of time. In the heating process the solid solubility is increased, and with subsequent cooling and aging certain constituents precipitate out, changing the physical properties. Careful attention must be given to the quenching temperature, as this is an important governing factor. In one series of steels aged at 100 degrees Cent., and the brinell hardness plotted at various intervals from 2 to 128 hours, fluctuations in the hardness curve were noted. Aging for 30 days at room temperature resulted in a gradual increase in hardness from 165 to 190, with no fluctuations.

Lowering aging temperature required longer aging time. Thus, maximum hardness was obtained in 2 hours with aging at 100 degrees Cent.; in 20 hours aging at 50 degrees Cent.; and in 30 days aging at room temperature. As a check on the hardness increase the specimens were tested again after a lapse of six months time and no changes were noted.

Ensuing discussion brought out the fact that increasing the carbon content decreases the effect of aging, especially in rolled steel, where it is practically eliminated. Noting this feature, C. H. Herty Jr., bureau of mines, Pittsburgh, suggested that probably the important factor governing hardness increase on aging in cast steel is the crystal size.

Savings Effected by Widening Scope of Welding and Cutting Operations

WELDED rolled steel design gradually is being accepted at blast furnaces in the construction of gas-seal hoods, receiving hoppers, downcomers, cold and hot blast mains and gas mains, stated C. A. Wills, William B. Pollock Co., Youngstown, O., at the opening session of the twelfth fall meeting of the American Welding society, Buffalo, Oct. 3. In all cases he added, savings are obtained and results generally are satisfactory to the engineer, manufacturer and user.

Stainless steel tin plate annealing boxes, he announced, are being tried out to obtain a comparison with boxes made of mild open-hearth rolled steel. Both are of welded construction because the user has ascertained that welded boxes not only retain their shape, but remain tight and free from leakage. At the present time, the stainless steel box has been subjected to 60 heats and is fulfilling expectations.

Scrapping of railroad cars and locomotives is an operation of growing importance to the railroads, waste material dealers and the oxyacetylene industry, explained W. H. Ludington, manager, applied engineering department, Air Reduction Sales Co., New York, in discussing the use of oxyacetylene gas in the reclamation of rolling stock. Cuts to be made with the torch, he explained, depend largely upon the shop equipment. If shears are available, the car sides and ends need only be gas cut to a size which can be handled under the shears, where the larger sizes are reduced to charging box size. By using shears, he pointed out, less linear feet of gas cutting per car is required and scrapping costs are lowered.

One scrapping program for 2000 cars produced 29,729 tons of salable scrap, 1888 tons of recovered material in usable condition, or approximately 6 per cent by weight and in addition, 400,000 board feet of reusable lumber. The average cost of scrapping a car is $25.77 based on a 141-car output per month whereas the average cost per locomotive is $134.71 based on the dismantling of 28 units. To obtain classified scrap at an average cost of only $2.29 per long ton, from obsolete equipment, has been found profitable. Data collected on locomotive scrapping, he concluded, indicate an average cost of about $1.30 per long ton for labor and material, including gases.

Exchange Ideas on Wire Manufacture

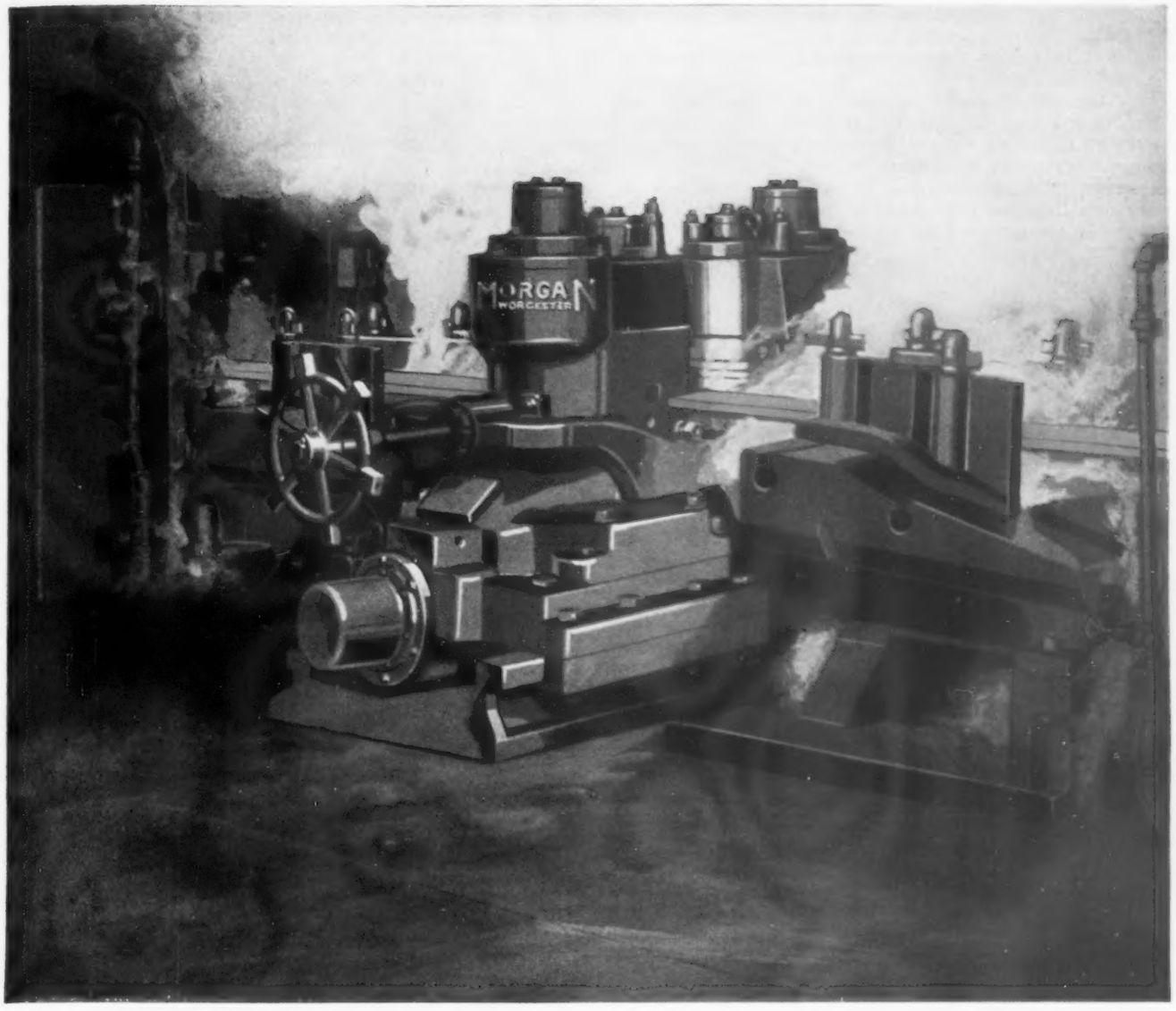
OVERHEAD handling or ram trucks seem to be the best way to move pins of rods from the rod yard through the cleaning and baking departments to the drawing frames in the opinion of L. D. Granger, assistant to vice president, Wickwire Spencer Steel Co., New York, whose observations on different types of material handling and the effect in reducing tonnage cost, presented at the opening session of the third annual meeting of the Wire association, Buffalo, Oct. 3, prompted wide discussion.

To allow more time for open discussion and exchange of experience in matters of general interest to wire mill operating men the program committee of the association limited the number of papers to one per session. In discussing the practice of continuous drawing of wire through tungsten carbide dies, one operator emphasized the importance of water cooling the die inasmuch as the carbide is not a good conductor of heat.

Weld Rod Ends in Drawing

Many wire drawing concerns now are employing welding to join the ends of rods thus obviating the necessity of stopping the reels to permit threading through the die. In discussing this practice, it was brought out that breakage amounts to about 20 per cent. Emphasis was placed on the matter of annealing the rods outside the welds in order to obtain even an 80 per cent yield. The consensus of opinion was that the welds are not smoothed down to the proper diameter before being served to the die and that the removal of the burr is one of the most important features to be considered when welding is employed. This usually is done with a file and frequently the rod is nicked.

An authority on wire drawing in stressing the importance of equip-



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ping welding machine for rod joining with a burr-removing device was advised that such a motor-operated device was being developed.

If the percentage of magnesia in lime is too high, the lime likely will drop off in the wire drawing process, according to the comments of one speaker. The suitable range of magnesia in lime for wire drawing purposes was mentioned as 0.2 to 0.5 per cent. The practice of passing lime through a 10-mesh screen before placing it in storage was recommended by one wiremaker. Wide discussion ensued over the length of time the lime tub should be used before renewing the solution. Tests made by one member, however, disclosed that the lime solution should not be discarded until the calcium sulphate reaches 1 per cent.

Find Correlation of Design And Production Essential

GREATER flexibility and versatility in machine tools and equipment are required to meet the designer's needs. In the automotive industry where changes are rapidly taking place this requirement is particularly felt. At the recent production meeting of the Society of Automotive Engineers in Buffalo, Oct. 3, L. F. Maurer, Pierce Arrow Motor Car Co., Buffalo, outlined some of the improvements in tooling, equipment and methods that will definitely aid designers.

Included among the factors which would provide means whereby refinement might be facilitated to a greater degree are, less costly means of changing center distances and number of spindles in multiple drilling and tapping machines, greater ease in changing over milling equipment, improved method of finish boring cylinders to closer limits, equipment for producing hardened steel cylinder liners cheaply, equipment to machine pistons and connecting rods to uniform weight employing an automatic weighing device, and last but not least on this list of desired improvements are ways and means of further reducing the cost of body and chassis sheet metal dies.

Production Ingenuity Needed

Similar thoughts were expressed in an address prepared by Alex Taub, Chevrolet Motor Co., Detroit. The rise in engineering standards has created the need for increased production ingenuity. Refinement in design is useless unless the machine shop can hold the dimensions accurately. To be able to make design changes in the product without great expense is more important now than ever before. Fixed-center boring machines are to blame for considerable engine trouble and may make design changes prohibitively expensive, Mr. Taub contended.

Good engineering ideas or principles often are doomed because the designs cannot be produced economically. The suggestion has been made that the engineer call in the machine tool specialist to collaborate on designs while they still are liquid. He suggested that rather than discard a new item, the shop should pass the problem of its fabrication out among the various tool companies in which it has confidence. Intimate engineering and shop contact is vital. The engineer should know his shop man in order to temper his suggestions to prevailing conditions. On the other hand, the shop man by his intimacy with engineering test results, can see the parts he is producing in the light of their functioning.

Depicts Trends in Design

Illustrating his talk on recent trends in machine tool design with a group of pictures, each one a machine characterized by outstanding design features, Guy Hubbard, Cleveland, opened the machine shop practice session of the Society of Mechanical Engineers. This meeting immediately followed a production luncheon sponsored jointly by the A. S. M. E. and S. A. E. groups.

Few realize that of the machine tool design progress of the last 20 years, a large portion actually has been made in the last two years, Mr. Hubbard brought out. He believes that the intensity of designing activity which has swept over the industry in this short space of time transcends that of any similar period in history, although this may not generally be realized until the next Machine Tool Builders' exposition.

It is worthy of note that this is by no means the first time that an economic depression has stimulated the engineering brains of the machine tool industry. It was during the slump of 1857 that the first commercially successful turret lathe was developed. The universal milling machine essentially as we know it today, was designed during the "secession depression" of 1861-62.

Application of hydraulics, one of the more recent trends in machine tool design, provided the background for a discussion on the influence of oil compressibility on speed characteristics of hydraulic high speed presses. The data was presented by Walter Ernst, Hydraulic Press Mfg. Co., Mt. Gilead, O.

Some of the advantages of hydraulics include accuracy of control of forces as to magnitude, direction and speed; smooth action of the driven apparatus; flexibility and versatility of the machines on which hydraulic systems are applied; economy in design, high efficiency and overload protection. The oils used are compressible to a high degree and it is evident that it is not possible to build up the pressure in a confined body of oil at an infinite rate. It is necessary to add a certain volume of oil to raise the pressure from atmospheric to the maximum.

The behavior of the fluid, according to Mr. Ernst, is assumed to follow Hooke's law of elasticity, if strictly elastic fluids are dealt with. Therefore, the compression will be proportional to the applied pressure. Formulas developed to show his conclusions comprised the greater part of the paper.

At the evening session of the machine shop practice division, R. E. W. Harrison, Cincinnati, gave a concise discussion on technique of size control in precision grinding operations. No better example of lack of control over sizing operations can be found than in the operation of the older type of internal grinding machine not provided with automatic sizing facilities. With these machines it frequently took more time to gage the work than was needed to actually grind it.

The three principal types of automatic sizing mechanisms on machines now on the market all have their special merits, Mr. Harrison said, and it is significant that the latest to be released does not entail the use of a dead stop mechanism. Introduction of hydraulics has provided the machine tool manufacturer with a sensitive means of controlling the approach of size to zero, and the fullest advantage is being taken of this system where it is economically applicable.

Compromise Is Introduced

In those cases where the quantities of work involved are so small it would not pay to set up a machine for entirely automatic operation, a compromise has been effected which amounts to a push button inching control over the sizing facilities on the machine. This type of equipment has many attractions, Mr. Harrison pointed out, inasmuch as the operator when gaging the work, even at some point remote from the machine, can by pressing a button inch

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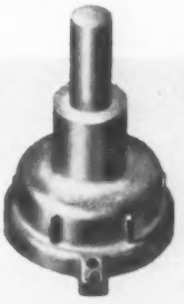

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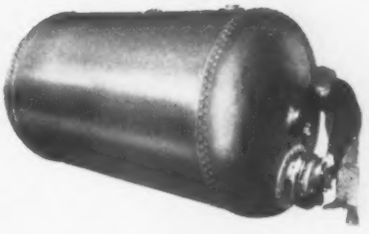

	Tensile Strength (lb. per sq. in.)	Elongation (in 2 in.)
Hot Rolled	68,000	51%
Cold Rolled	85,000	30%

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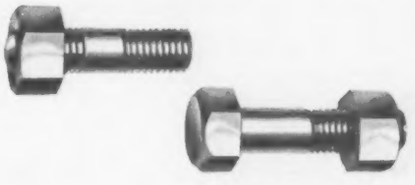

	Tensile Strength (lb. per sq. in.)	Elongation (in 2 in.)
Hot Rolled, from a minimum of	67,000	60%
Cold Drawn, to a maximum of	125,000	10%

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	Tensile Strength (lb. per sq. in.)	Elongation (in 2 in.)
Sand Cast Herculoy	53,000	28%

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in the control 0.0001 inch at a time and therefore quickly bring the throat of the machine back to the necessary dimension to insure that the work is produced within the prescribed limits of the tolerance.

Classifying alloys used in modern die casting practice in five principal groups, Louis H. Morin, Doehler Die Casting Co., New York, presented pertinent data on the design of products to utilize die castings instead of machined parts. Bases of alloys which fall into these five groups are tin, lead, zinc, aluminum and copper.

Temperature Regulates Die Life

Difficulties in die casting practice, said Mr. Morin, increase with advancing melting and casting temperatures of the alloys used. The life of die casting dies varies with the temperatures employed. For instance, dies for lead base and zinc base alloys having casting temperatures not in excess of 800 degrees Fahr. may be made from ordinary machine steel without heat treatment. For aluminum base alloys with casting temperatures around 1300 degrees Fahr. the greater heat absorption makes it necessary to use a high-grade alloy steel for best results from dies.

Furthermore, proper heat treatment of the alloy steel die is essential in order to obtain a life of 200,000 castings. Brasses and bronzes having casting temperatures still higher and greater heat-absorption values, naturally cause more difficulties than aluminum. Die failures are due to the formation of heat or thermal fatigue cracks, the action of which is not unlike the checking of steel gun barrels.

Heat cracks in the die cause a network of check marks or small fins on the casting. In the last few years, however, metallurgists have developed improved steels for die casting dies, as well as better methods and technique for heat treatment of dies.

Fundamental factors of quality in satisfactory die casting are strength, accuracy and uniformity. Strength is obtained by proper designing of the part to be cast, by using high-quality raw materials in the alloys, by alloying under strict supervision of chemists and metallurgists, by protecting against segregation in the process of casting, by producing castings that are close grained, and by eliminating casting defects.

Accuracy is obtained, Mr. Morin set forth, by the proper calculation of shrinkages, by accurate construction of the die, by temperature control of the die as well as of the alloy, and by a system of continuous checking by gages or templets for detection of inaccuracies.

By weighing each casting for detection of any variations and by extreme care in the process of cleaning, uniformity may be secured. Machine construction frequently calls for the riveting of a part to a die casting. In a number of cases riveting studs readily can be cast directly into the piece at practically no extra cost. In addition to this a head might not harmonize with the design of the finished surface, and by die casting the rivet in one piece with the casting the head does not show.

Oil Refinery Will Take Large Tonnage of Steel

Rapid progress is being made on construction of the new refinery of the Shell Oil Co., Montreal, Que., where 300 men are working day and night to complete construction before winter. The new refinery, estimated cost of which is approximately $2,000,000, will be of the most modern type of construction. The reaction chamber, weighing 68 tons, will have steel walls 5¾ inches thick. One of the hot oil service and high-pressure pumps will be 37 feet long. Loading pumps will be controlled automatically from the dock. Contract for tanks has been awarded to the Toronto Iron Works, the order covering a total of 23 tanks, five of which are of 4,130,000 gallons capacity each. One of these is to be completed within six weeks, and three will be ready to receive crude oil before the close of navigation.

Engineer Is Awarded Medal For Distinguished Service

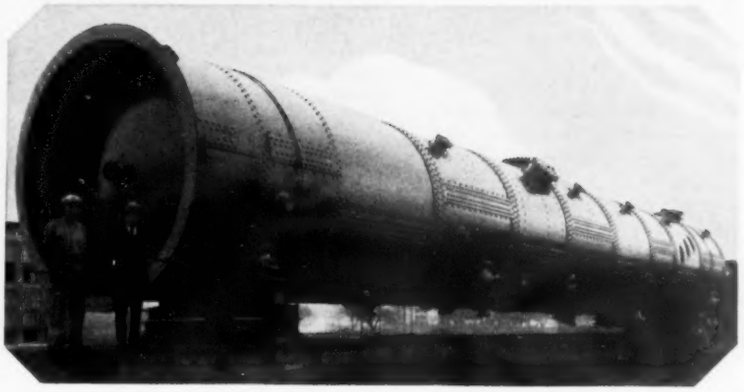
Herman A. Wagner, consulting mining and metallurgical engineer, Chicago, has been awarded the second Clausen gold medal of the American Association of Engineers for distinguished service performed in behalf of social and economic welfare work for the engineer. The award was made at the annual meeting of the body in Washington, Sept. 28.

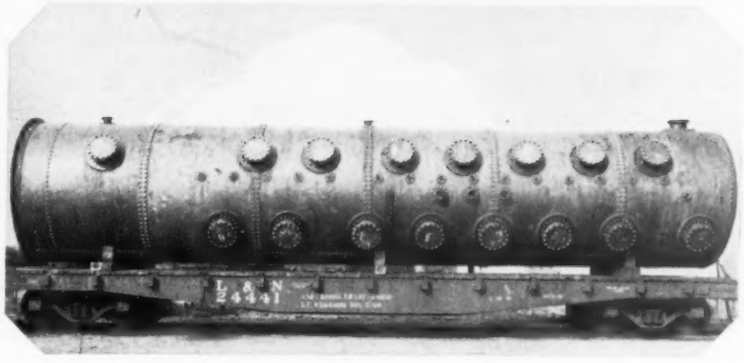
The medal was founded in 1926 and the first award was made in 1931. Mr. Wagner has devoted seven years as a director and officer of the association and he received the medal in recognition of personal devotion to the cause. He is the inventor of electrolytic processes for the treatment of refractory ores, copper, zinc, lead, and molybdenum and tungsten ores, and has many patents and processes to his credit. He has engaged in mining and engineering operations on five continents.

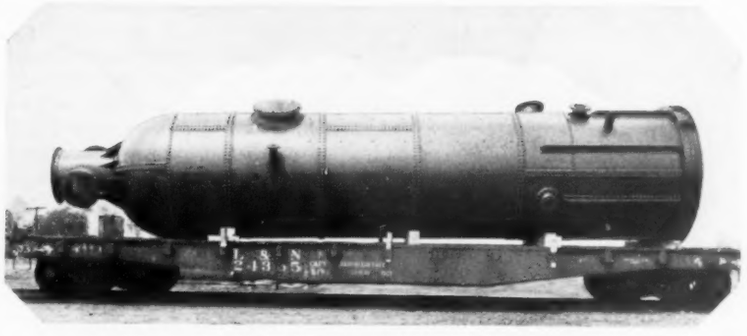
Mr. Wagner has contributed many surveys on unemployment insurance, welfare foundations, employment, and the like. Several years ago he made a study of "The Deadline at 40" and his findings were published widely. He has tried to determine why the engineer is not better recognized and properly recompensed for his contributions to civilization.

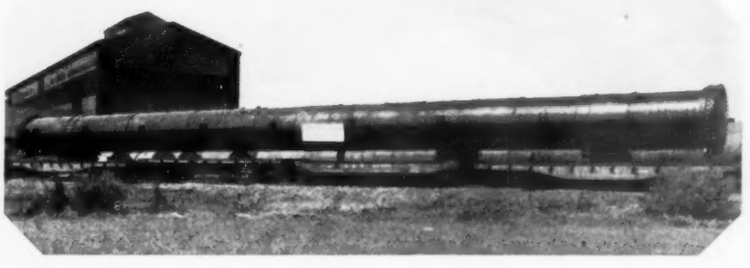
PROBABLY THE LARGEST GASOLINE HAULING VEHICLE IN EXISTENCE: This 36-foot 5400-gallon frameless semi-trailer now being operated on the Atlantic seaboard by the Standard Oil Co. is one of a pair built by the Columbian Steel Tank Co., Kansas City, Mo., to give maximum gallonage under New Jersey highway statutes which limit the total weight of any one vehicle to 60,000 pounds. The tank, with hose tubes, tunnel outlets, valves, etc., weighs 8950 pounds and has nine compartments, all of which may be emptied completely in about 30 minutes. The tank itself weighs 1.6 pounds per gallon of gasoline, this including the integral frame since the tank is built to serve as its own draft member. Elimination of the usual drop frame not only reduced weight but permitted lowering of the center of gravity several inches

TENNESSEE PLATES









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Products in Metal Show Meet Challenge of Depression

IN SIZE alone did the Fourteenth Annual National Metal exposition held last week in the 174th Regiment Armory, Buffalo, fall below preceding shows. Exhibits only numbered 107; however, in every other respect did the exhibition measure up to the high standard established in the past 13 years. Considering the unfavorable business conditions which have confronted industry during 1932, an unusually complete line of products was displayed and with ample space available these were most attractively arranged.

Reflected throughout all products and equipment was the determined effort of manufacturers to meet the demands of lower costs, more efficient production and superior quality which have been imposed by the depression. With resumption of normal business will develop a widespread need for the newer materials for in spite of restricted operations obsolescence has exacted a heavy toll.

Displays Cover Wide Range

Among the products to be seen at the exposition were: Carbon and alloy construction and machinery steels; tool and die steels; heat, acid and corrosion-resisting steels; gray iron, steel, malleable and die castings; nonferrous and special alloys; electric, gas and oil heat treating furnaces and heating machines; burners and heating elements; refractory and insulating materials; heat treating and cleaning compounds; temperature and pressure recording and control devices; physical testing and metallographic equipment; welded products, welding apparatus and accessories; and machine tools.

That there is a growing tendency toward the application of stainless steel of both corrosion and heat-resisting quality was attested by the various displays. Etched designs and figures on highly polished and satin finished stainless sheets were shown as typical of architectural applications. A wide assortment of products fabricated from this grade of steel, including automobile headlamps, radiator shells, tire covers, building hardware, and containers used in hotels and the food industries, were shown.

A recently developed ingot stripper applicable to existing equipment in any plant was shown in model form for the first time. The unit includes a car locater which advances the ingot cars along the tracks and spots the molds to be stripped. A holddown mechanism then makes contact with the upper face of the mold to be stripped, holding it against upward movement while the ingot is being lifted. A plunger located beneath the track raises the ingot to a certain height where it automatically is locked in its elevated position. All operations are controlled electrically and are interlocked.

Tungsten carbide dies for wire drawing, credited by the industry as a development of far-reaching importance, were shown by one producer in conjunction with cold-drawn, tool and die steels. Drop forgings, socket and open wrenches, pipe tongs and vises formed the exhibit of one producer. All makers of cold-drawn material represented at the exhibit showed their product either in bars or shapes or in various tools and implements made therefrom.

Three new marketing methods instituted by a manufacturer of cemented tungsten carbide tools were outlined to visitors. Each of these plans was aimed to save the user of cemented carbide tools an appreciable amount on tool costs. The first plan was to supply the tools in milled and brazed condition, the user being required to carry out the grinding of the tool. The second plan involved fitting the carbide tips to milled shanks supplied by the user. Most economical and convenient was the third plan, by which a tool manufacturing kit is supplied to the user, containing copper, flux for brazing, carbon tetrachloride, four cemented carbide tool tips and recessed shanks. Under this setup the user torch brazes the tips to the shanks and grinds the tips flush in his own shop, realizing a saving in cost of beter than 30 per cent over buying the tools completely finished.

Examples of the endless applications of zinc die castings in present-day manufactured products were featured by one exhibitor. Another showed die-cast parts of aluminum bronze. Magnesium alloys, nickel alloys, corrosion and heat-resisting castings, special types of alloy steel for oil refineries drew attention as still other displays.

Exhibits of furnaces and heating equipment, although somewhat limited in number and scope, comprised one of the principal divisions of the show and almost without exception each manufacturer had somethin new to offer. The recently dev oped diffusion-type gas burner a a slot-type forging furnace equippe with diffusion burners were demonstrated by a gas furnace manufacturer. Another builder of gas furnaces showed for the first time a new bell-type retort furnace for universal heat treating operations, including gas carburizing, nitriding, and bright annealing as well as the usual hardening, tempering and annealing. This company also offered a new carburizing treatment which produces a very thin hard case.

Immersion Heater Featured

An immersion-type heater burning gas and being automatically controlled was demonstrated by a manufacturer of industrial gas burning equipment. This heater was shown melting soft metals. Another burner manufacturer was showing a new type of nozzle burner operating on gas at city pressure and having a large range of turndown. This burner is supplied air through its center as well as through the mixer.

For use in molding plastics an exhibitor of gas burners showed a newly designed platen heated by gas and having the burners so arranged as to give uniform heat. The heating is by radiation from incandescent refractory tips and the parts in contact with the tips are made of heat-resisting noncorrosive metal. In addition to this equipment, the same manufacturer demonstrated a new type of burner tip and a very small furnace for treating small parts.

Another small furnace to be seen in the booth of an exhibitor was a bench-type high-speed furnace, fully baffled, and operating on city gas pressure. Air blast was supplied to it by a 1/16-horsepower motor-blower mounted on the rear of the furnace.

Recently developed and demonstrated for the first time was a device for changing oil from a liquid

Award Cups to Exhibitors

A NEW feature of the National Metal exposition this year was the awarding of silver loving cups for the three most interesting exhibits. Selections were made by a committee of five, appointed by the mayor of Buffalo. Two of the committee were advertising men, three were engineers —none being a member of the society. First prize was awarded to the exhibit of the Jones & Laughlin Steel Corp.; second prize to the Air Reduction Sales Co.; and third prize to the Grasselli Chemical Co. Honorable mentions were given to displays of the New Jersey Zinc Co., Superior Steel Corp., and the Carborundum Co.

to a gaseous state in a neutral atmosphere and mixing this hydrocarbon gas with the proper amount of air for combustion. This combustible mixture is then carried to the burners. The smallest size of the device, having a capacity of from 50,000 to 300,000 B.t.u. per hour, was shown operating a heat treating furnace.

Two electric resistance heating machines making use of the electric eye or photoelectric tube to release work automatically when heated to ·e proper temperature proved of erest to many visitors. One of se machines was a small unit inded for heating the ends of valve stems preparatory to hardening or for a variety of light heating operations. The larger machine, having a capacity to heat stock from ⅜ to 1-inch diameter in lengths up 12 inches, was equipped with au- itic feed, and automatic kick- The electric eye prevents burn- ; and, it is claimed, holds temperature variations in heating stock within a range of 20 degrees Fahr.

Electric Dissociator Shown

A newly developed electric ammonia dissociator which yields a dry gas containing 75 per cent hydrogen and 25 per cent nitrogen suitable for nonoxidizing furnace atmospheres also was shown. A large electrical manufacturer exhibited an improved line of strip, spot and immersion heaters using electrical energy.

Makers of refractories had attractive displays of special shapes of insulating brick and brick coated with high-temperature cement. A wide variety of abrasive materials was exhibited, such as grinding wheels for billets, castings, etc.; wheels for cutting, sawing and notching; and wheels for grinding tungsten carbide. Rubber-bonded wheels were shown in operation grinding and finishing stainless steel welds and thin wheels of 12 to 16 inches diameter cutting off steel drills, taps and reamers.

Welding equipment and accessories occupied prominent positions in the exhibits. Of special interest were several new flame-cutting machines displayed by one company for the first time. One was designed particularly for automatic oxyacetylene die cutting, stack cutting of thin plates, etc. A second was an automatic machine for cutting small or large shapes to precise forms and dimensions. On the latter machine the torch was driven by a magnetic roller contacting with the periphery of a cam or templet of the form required to produce the desired cut shape. The machine was so constructed as to permit the torch traversing any part of a large rectangular area, the width of which is sufficient for all normal requirements and the length of which may vary from 10 to 50 or more feet.

A third machine in this exhibit, known as a radiagraph unit, featured new attachments which adapt it to splitting defective I-beams for plate salvage and cutting rings or flanges with two torches working simultaneously. Two new pipe beveling machines for cutting off and beveling for welding sizes of pipe ranging from 4 to 36 inches in diameter also were demonstrated.

A new and interesting method for automatic arc welding longitudinal seams was in operation, claimed to make welds which meet all requirements of the A.S.M.E. code for class 1 and class 2 welding work. In general, the machine comprised a set of contact arms or "guns" mounted on a frame at right angles to the seam to be welded. These arms are lowered against the welding rod placed on the seam, making contact with the rod and holding it against the seam. A special type of coated "self-consuming" welding rod is used; an arc is struck between the rod and the metal, after which the rod actually consumes itself, depositing the metal along the seam. When the arc reaches the contact point on the "gun," an electrical circuit through the gun is shorted and a spring released, with the result that the gun flies back, releasing the pressure against the welding rod. These guns are placed about 18 inches apart and can be so set up on either a straight or curved seam.

Many Welding Accessories

Improved types of arc welding machines, high-speed spot welders, samples of specimen welds which withstood high stresses, oxyacetylene welding and cutting apparatus and supplies, materials and equipment thermit welding, welding wire and rod were on display at many booths, all emphasing the trend toward increasing economy, reliability and speed of welding operations.

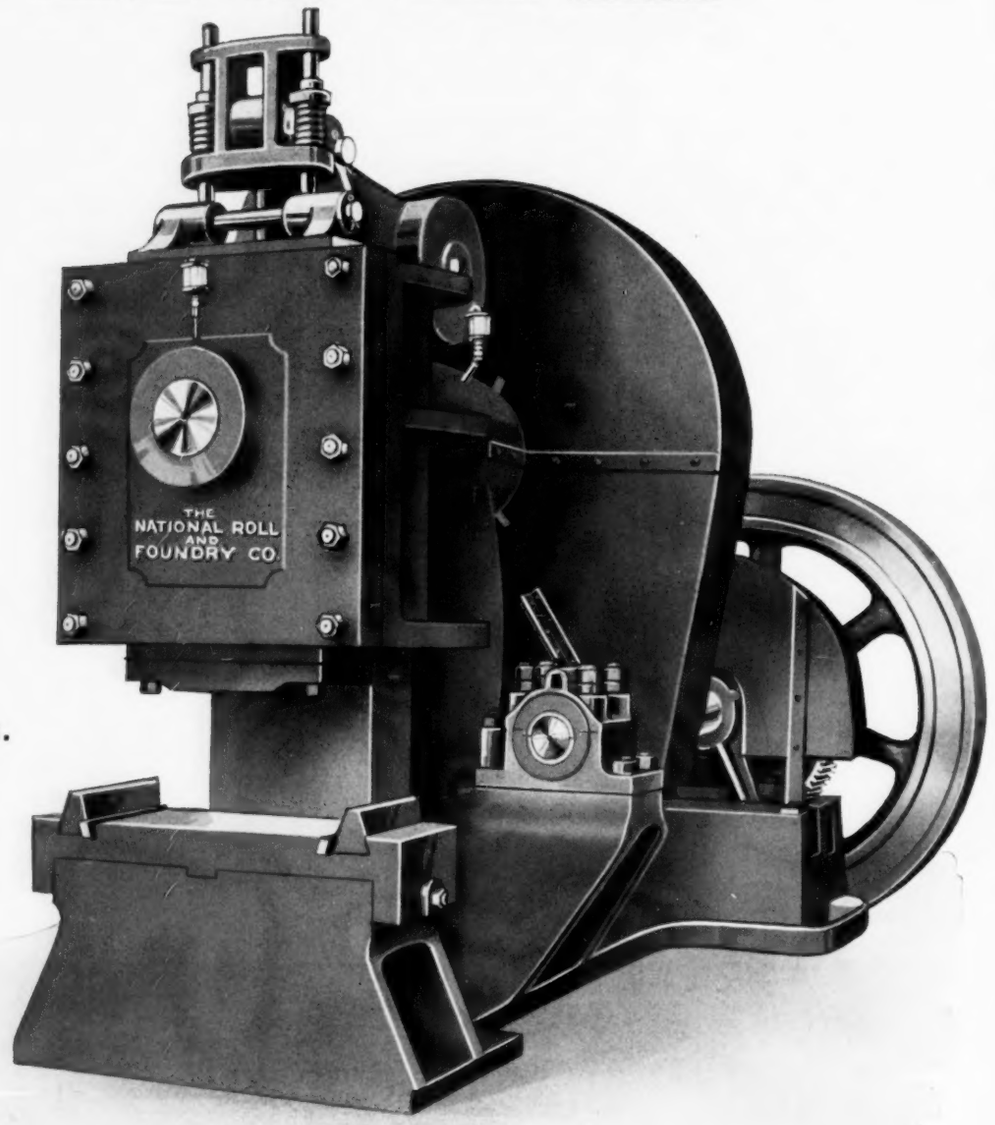
Marked progress has been made in the development of instruments for use in the laboratory and engineering department. Their application is even broader in some cases as for instance the portable combination contact pyrometer for determining surface temperatures. This particular device is equipped with interchangeable thermocouples for both metallic and nonmetallic application. Determination of furnace wall temperatures and paper mill roll temperatures are typical uses.

A nest of indicating pyrometers to show the temperatures existing in differents parts of a furnace was an additional innovation exhibited for

(*Please turn to Page* 65)

A general view of the 1932 *National Metal exposition in the* 174*th Regiment Armory, Buffalo, Oct.* 3-7. *Many of the exhibitors showed their equipment in operation*

"NATIONAL" ROLL



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Making the Most of

METHODS AND MATERIALS

DUCTILITY in a metal sometimes is supposed to be an index of serviceability under repeated stress. Ductility has no direct connection with the endurance limit of a metal, according to a well-known investigator. Hard brittle metals develop higher endurance limits than soft ductile metals. The advantage of ductility in a part to be subjected to cycles of stress lies in the ability it confers on the metal to make scores of slight plastic adjustments under load without starting a crack. Tens of thousands of cycles of stress may start a spreading crack in a ductile metal, but a few score of cycles, even of high stress, will not do so.

FUSION welds in steel pressure vessels should be stress relieved if the ratio of diameter to the cube of the wall thickness exceeds 100. The strain anneal consists in heating the vessel to 1100 to 1200 degrees Fahr. and cooling.

\$ \$ \$

Castings of 18-8 chrome-nickel corrosion-resisting steel for valves to be used in marine equipment are annealed at a temperature generally not less than 1800 degrees Fahr. and cooled rapidly. Castings are pickled after annealing and then passivated. For navy vessels 18-8 valve castings must not be repaired, plugged or welded without permission from the inspector. If welded, this operation must be completed before final heat treament, and then defects must be of a minor type. Shrinkage cracks must not be welded without approval. Castings are well cleaned for inspection with heads and gates removed for such inspection in the green. If heads and gates are removed by burning, this must be done at least 0.5 inch from the body of the castings, the remaining metal being removed by grinding, cutting or machining.

\$ \$ \$

A common method of reducing noise is the reduction of production tolerances for moving parts. This generally is effective, also sometimes quite expensive. This fact is evident when it is realized that defects in rotating parts of a few millionths of an inch can be the cause of a noticeable noise. Before the designer insists upon close tolerances, he should see if some cheaper means can be found to accomplish the results. Sometimes changes can be made in the lubricating system to take advantage of the damping or cushioning effect of oil.

\$ \$ \$

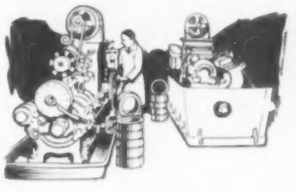
By combining blue lead with an entirely new type of vehicle or binder, an eastern manufacturer has developed a prime coat which gives a tough, hard, tenacious coating, not readily scuffed off by mechanical handling, which will not chalk even after much exposure to the atmosphere. This new metal primer is made up of sublimed blue lead incorporated with a special type of vehicle. Due to the new process by which it is mixed with blue lead, the vehicle forms a film hard enough to protect the blue lead, yet elastic enough to take care of expansion and contraction.

\$ \$ \$

In a pedal-operated riveting machine, the shock is taken up and the noise reduced by a pneumatic cylinder. This device draws air through a valve on the downward movement of the head, which corresponds to the upward movement of the piston. As the spring on the foot pedal returns the head to its original position, the piston compresses the air in the chamber. Some of this air escapes through a port, but at a certain point in the cycle the cylinder closes this port and the remainder of the air is held in the bottom, completely cushioning the blow.

\$ \$ \$

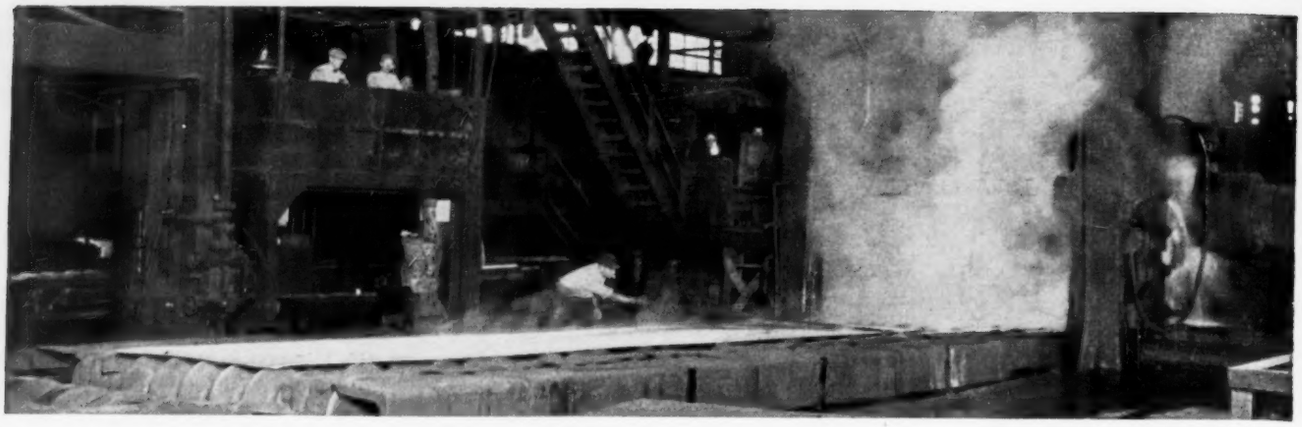
In polishing stainless steels, wheel speeds should range between 6500 and 7500 surface feet per minute. In buffing, the speed should be between 10,000 and 12,000 feet per minute, and in every operation it is very important that the wheel be in balance. Tallow or some other lubricant should be used to prevent overheating and discoloration on all operations except the first and the final coloring. In cutting down operations the operator should avoid forcing the wheel as this often causes discoloration which is difficult to remove in later operations.



WHEN the rake surface of a cutting tool is chromium plated, the friction between the heavily loaded chips and the top of the tool is decreased greatly by the lubricating effect so peculiar to the chromium-plated surface. There also is evidence to show that one of the most useful effects in cutting nonferrous metals is in reducing the tendency for the chip to weld or stick on the tool. Obviously, wherever the metal does weld there is a cratering effect which not only wears down the tool, but also affects the development of the chip.

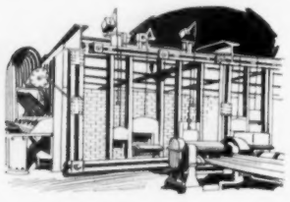
\$ \$ \$

A company manufacturing a special kind of machinery used in the paper industry found that in the course of years no less than 1000 different bevel gears for a transmission ratio of 1 to 1 had been designed and made. Making allowances for necessary differences on account of varying speeds and loads, standardization would have limited the designs to a relatively small number, with consequent large savings on patterns, storage space, design, drawings, and making the gears in larger lots.



PROGRESS IN STEELMAKING

INSTALLATION of a bracket on a hot metal crane serving an open-hearth shop in the Pittsburgh district for the purpose of limiting the swing of the main hoist ropes, has greatly increased the life of the cables.



CERTAIN disadvantages of water-cooled skids for billet and slab reheating furnaces are eliminated in a newly designed German system. The cooling pipes are bent one or more times, the loops serving as supports for the skids. The pipes are anchored solidly in the furnace hearth. Welding round or square skid bars to the top surface of the pipe facilitates their replacement. This arrangement affords the heating of 150,000 tons of semifinished material per campaign of cooling pipe. Incrustation within the cooling system is avoided by maintaining the temperature of the discharge water from 120 to 140 degrees Fahr. Water consumption for large German furnaces ranges from 280 to 350 cubic feet an hour.

♦ ♦ ♦

Cracks in ingots have been traced by a steelmaker in the Chicago district to tar-coated molds. This conclusion is based on tests made by spraying the molds alternately with tar and with graphite and using the same complement of molds on the same heat of steel.

♦ ♦ ♦

Drainage of the condensate in blast furnace gas piped from the blast furnace to the by-product coke ovens at a plant near the Pittsburgh district, is accomplished by sloping the main and automatically discharging the liquid through water-sealed down legs. Each leg is provided with an electrical float switch which flashes a signal to the gas washer attendant when the level of the water in any seal drops below normal.

♦ ♦ ♦

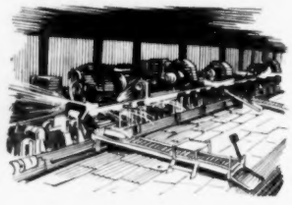
Demonstrations have proved the the life of mill bearings can be increased two to three times by chamfering the bearings at the lubricant entrance and by using a light body lubricant.

♦ ♦ ♦

Indicating and recording the percentage of carbon dioxide and combustibles in open-hearth flue gases are accomplished automatically by a new analyzer which operates on the orsat principle and records and indicates electrically.

♦ ♦ ♦

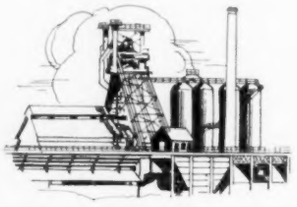
A coolant used successfully in the roll grinding field when all kinds of rolls are surfaced with various types of abrasive wheels is composed of 3 gallons of soluble oil, 150 gallons of water and 2 pounds of sodium carbonate.



REDUCING the thickness of hot saws 1/16-inch at a plant in the Pittsburgh district has curtailed the production of saw chips 2000 tons annually.

♦ ♦ ♦

Extensive research has led to the production of a laminated metal felt material in which felt is cemented to steel with heat and pressure utilizing metals as adhesives. The new composite material lends itself to forming, rolling and mild drawing operations without destroying the adhesion between the steel and felt. By the addition of saturants the material can be used for fireproofing, corrosion-resistance, pipe line protective and soundproofing purposes.



MIXER and check relief valves for installation between the hot and cold blast mains of blast furnaces are combined in a recently developed dual unit. The new valve performs the double service of opening the main to the atmosphere and of closing the by-pass main. Should the blast pressure fail, the relief valve disk automatically closes the by-pass main, thus preventing a kickback of the gas to the blowing engines. Control of both operations by a single unit effects a reduction in the cost per valve, labor and space required for installation.

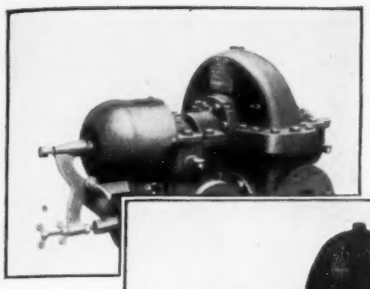
♦ ♦ ♦

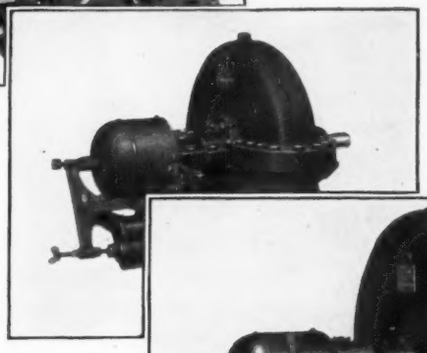
Table rollers in use at a mill in the Chicago district with the barrel made of steel pipe to which short length bars are welded to serve as shafting, have eliminated weight from the roller table, reduced power consumption and minimized the quantity of shafting required.

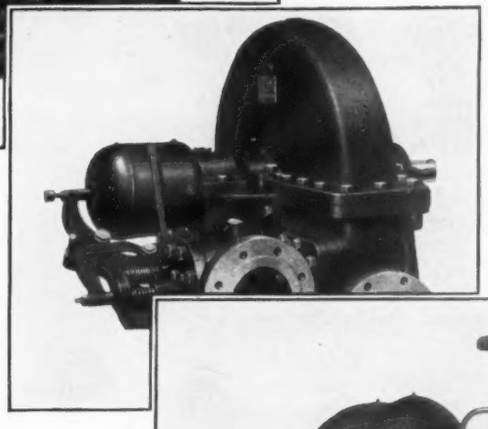
♦ ♦ ♦

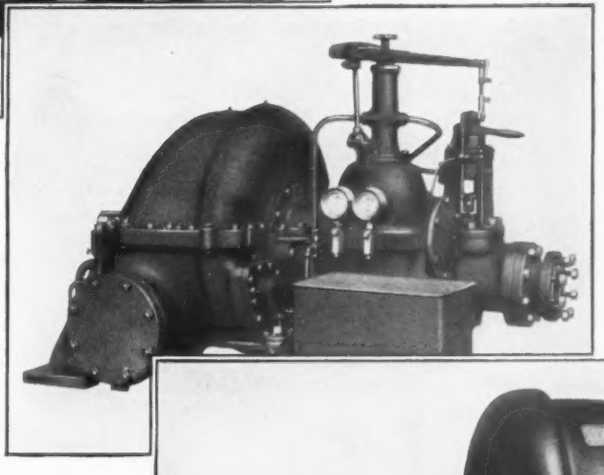
Measuring furnace temperatures without the use of an objective lense and telescope has been made possible by the development of a 22-volt lamp containing an inverted U-shaped carbon filament and a small eyelet. The current in the lamp is indicated by a motor and may be referred to a curve to find the degree of heat.

Mechanical-Drive Turbines for TIRED BOILER PLANTS









IF the demands on your boiler plant suddenly increase, will it show signs of getting weary? If so, now is the time to consider how to get maximum power from the steam you generate. With G-E mechanical-drive turbines you can:

1. Provide low-pressure steam where only high-pressure is available.
2. Utilize steam which is now being wasted.
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—and at the same time drive pumps, compressors, fans, pulverizers, or extractors.

Whatever the need, if a mechanical-drive turbine can be used, there is a G-E turbine which will fit, whether it is for continuous or stand-by service, and whether it is installed indoors or out.

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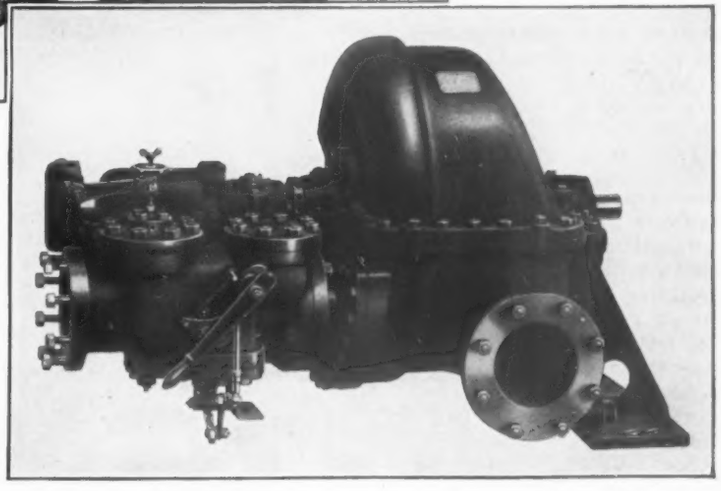
Cooling-water pumps
Fire pumps
Forced-draft fans
Fuel-oil-circulating pumps
Induced-draft fans
Water-circulating pumps



175-53

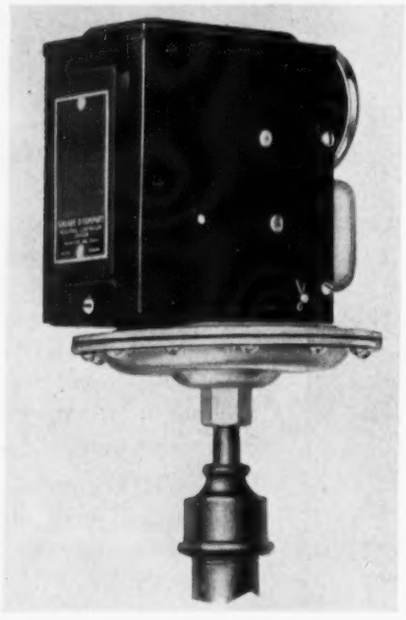
GENERAL ELECTRIC

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Manufactures New High Water Alarm

Industrial Controller division, Square D Co., Milwaukee, has added a new high-water alarm to its line of pressure, float, and vacuum switches. The unit, shown herewith, is for use over sump or open tanks and sounds a warning when the liquid reaches a dangerously high level, providing an inexpensive device which may prevent serious flood damage.



High-water alarm marketed by Industrial Controller Div., Square D Co.

The alarm consists of a single pole pressure switch, a transformer, and signal bell, wired in one unit and mounted on a 1-inch pipe. A rising column of liquid in the pipe exerts air pressure on the diaphragm of the switch, closing a contact and ringing the bell. Signal will continue until the high liquid level has been reduced to a safe limit. This switch is designated Class 9036H1.

◆

Designs Multiple-Spindle Chucking Machines

Goss & DeLeeuw Machine Co., New Britain, Conn., has developed a full line of multiple-spindle chucking machines, one of which is shown in the accompanying illustration. Designated the duplex type, all tools and chucks can revolve simultaneously. Various other combinations can be effected in the same machine, such as all tools revolving while the chucks remain stationary or vice versa, or the chucks can revolve simultaneously with any number of tools, the others remaining stationary.

The large and solid cross slides located in the first and third tooling positions are supported on the broad turret ways of the unit and are operated by means of the movement of the turret slide. Smallest of these machines, the 6 x 6¾-inch has a maximum feed stroke of 6¾ inches, and will swing a piece 6 inches in diameter; the largest, the 11 x 10-inch, has a maximum feed stroke of 10 inches and will swing a piece 11 inches in diameter. If the machines are used as purely revolving machines larger pieces can be handled.

◆

Develops Line of High-Speed Welding Electrodes

Wilson Welder & Metals Co. Inc., North Bergen, N. J., is introducing a line of high-speed welding electrodes to give maximum speed with a small amount of scale on the weld. The scale can be brushed off, but if an air hammer is used to finish to size, the scale is removed in the same operation.

Electrode No. 17 has been designed to give sufficient carbon deposit of a uniform close grain structure. High tensile strength of 60,000 to 65,000 pounds is obtained with an elongation of 15 per cent in 1 inch across weld. Correct current for the 3/16-inch size rod is from 180 to 250 amperes, and for the 5/32-inch diameter 150 to 175 amperes, depending on volume and weight of parent metal being welded.

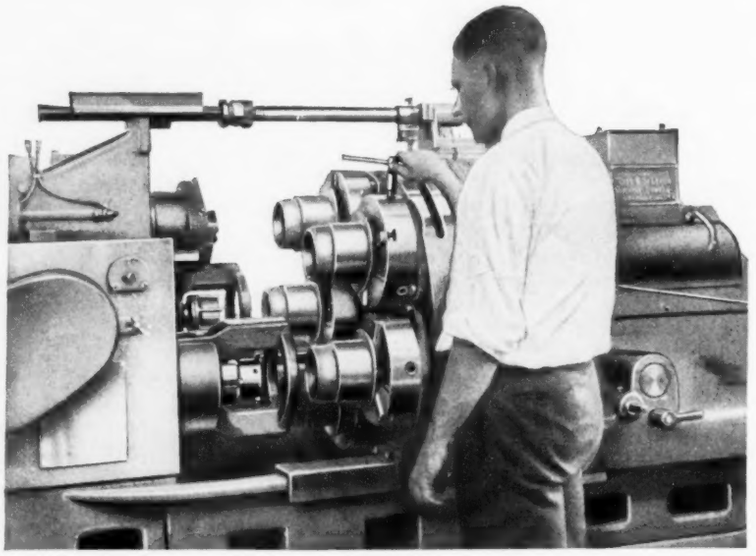
◆

Extractor Removes Plastic, Semiplastic Materials

Paint Makers Specialty Supply Co., 1869 Haldane Road, S. E., Cleveland, is marketing an extractor for removing plastic and semiplastic materials from drums. This device, shown in the accompanying illustration, will handle glazing and caulking compounds, liquid and plastic roof cement, heavy grease, etc. Capacity is 3 to 4 gallons per minute.

Extractor for compounds, marketed by Paint Makers Specialty Supply Co.

The extractor is screwed tightly into



Goss & DeLeeuw multiple-spindle chucking machine, 11 x 10-inch size

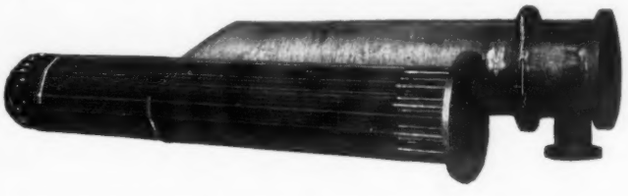
the opening at the bottom of the drum and the shutoff valve opened. After the handle is pulled back and forth a flow of material is secured.

◆

Storage Tank Oil Heater Provides Compact Unit

Griscom-Russell Co., 285 Madison avenue, New York, recently announced a new storage tank oil heater for heating viscous oils to be withdrawn from field tanks, tanks on shipboard and from other types of storage units. The heating elements, as shown in the accompanying illustration, consist of U-shaped steel pipes with longitudinal fins equally spaced about the circumference.

The U-bend portion of each pipe is left bare and the open end of the shell which encloses the heating elements is specially shaped so as to facilitate entry of oil into the shell. Ends of the pipes directly opposite the oil outlet also are left bare to facilitate the flow of oil from the heater.



Storage tank oil heater manufactured by the Griscom-Russell Co.

The heater is installed with the shell and heating elements extending into the tank, and the steam, drain and oil connections outside the tank. Oil enters the open end of the shell and is heated in flowing to the outlet connection by contact with the extended G-fin surface. Steam for the heating elements is supplied to the upper pass of the U-bend pipes, and the condensate is drained from the lower pass.

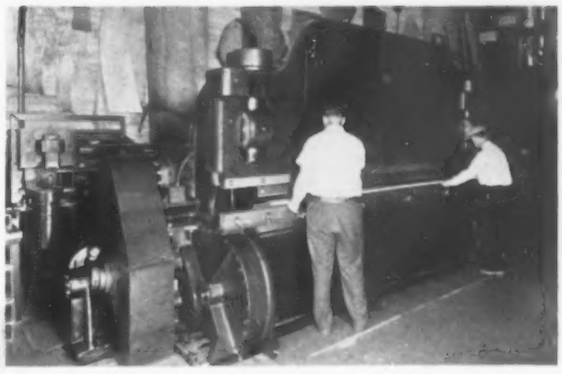
◆

Press-Brake Embodies Welded Steel Construction

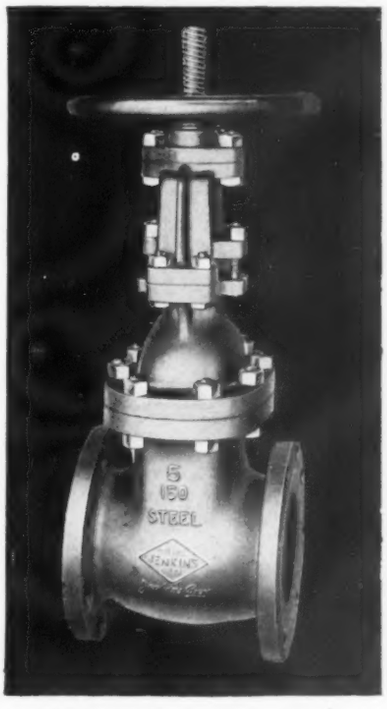
Farrel-Birmingham Co., Ansonia, Conn., recently announced a new Rafter press-brake which combines with other distinctive features, welded construction of its unusually deep ram and bed. The bed is made of rolled steel plate, welded into a heavy, rugged girder section, designed to bring deflection under capacity load to minimum without weaving and side distortion.

As shown in the accompanying illustration, there is no driving mechanism on the upper part of the machine; it is attached to or contained within the bed. Another unique feature of the machine is the principle of operation which pulls the ram from below instead of pushing it from above. Power is transmitted from the driving motor to the flywheel through a multiple V-belt and friction clutch.

WELDED steel construction is one of the features of the Rafter press-brake recently developed by Farrel-Birmingham Co. Inc. The unit is self contained and is built in a variety of sizes



The base and the ram are the only two major members of the press-brake. Absence of side housings and crown eliminates dead weight. Because of the rigidity of the base a simple flat bed of concrete of sufficient depth to carry the weight suffices for the foundation. The units are built in a variety of sizes.



Jenkins cast steel gate valve designated as series 15

◆

Gate Valves Withstand High Temperatures

Jenkins Bros., 80 White street, New York, has placed on the market gate valves made of cast steel containing 1 per cent chrome and 0.5 per cent molybdenum. This alloy, which is produced in an electric furnace, and has tensile strength of 100,000 pounds per square inch, has been adopted because it permits greater strength in valves conforming to standard dimensions and design. Valves of this alloy are furnished in series 15, for 150 pounds steam working pressure, and in Series 30, for 300 pounds steam working pressure. They are supplied with various mountings, such as bronze nickel alloy, monel, stainless steel, etc., for total temperatures up to 750 degrees Fahr. Seat rings, made of the same metal as the trim, are renewable. Chamber plugs also are renewable. Valves of the chrome molybdenum cast steel are intended primarily for boiler feeds, steam and hot oil lines. Series 15 is shown left.

◆

Introduces Control System For Press Drives

Cutler-Hammer Inc., Milwaukee, announces the development of a simplified system of control for operating electromagnetic clutches and brakes applied to punch and forming presses. The control incorporates a patented safety feature, which is a plurality of palm operated push buttons, mounted directly on the slide of the press. This insures that each hand of each operator will be occupied in holding a button depressed, and consequently free from the press when the slide is descending to the bottom of the stroke.

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REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

PITTSBURGH CINCINNATI NEW YORK SAN FRANCISCO GRAND RAPIDS INDIANAPOLIS BOSTON TULSA DENVER TOLEDO SEATTLE CHICAGO ST LOUIS ST PAUL DETROIT DALLAS LOS ANGELES BIRMINGHAM PHILADELPHIA BUFFALO CLEVELAND MILWAUKEE

Small Orders Rule as Steel Rate Gains to 19

Final Figures for September Show Unexpected Improvement—Five More Blast Furnaces Active—Structural Inquiry Broad—More Railroad Interest

SEPTEMBER improvement in steel production exceeded all expectations, the daily ingot rate of 37,502 tons as determined by the American Iron and Steel institute indicating an operating rate of 17.3 per cent, an increase of 3 points or 21½ per cent over August and the highest since May.

Production of pig iron, as of steel, last month registered its first gain since February, the daily iron rate of 19,788 tons being the highest since June and implying a blast furnace rate of 14 per cent, a rise of 2 points or 16 per cent. An increase of five in active stacks as of Sept. 30, when 46 were in blast, was the first expansion of capacity since February.

With October one-third gone, there is every indication that this month also will record substantial betterment. Steelmaking operations in the week ended Oct. 8 gained another point, to 19 per cent, largely on the strength of expansion in the Chicago and eastern Pennsylvania districts, and a scheduled increase at Pittsburgh may put the rate up to 20 this week.

While such major consumers of iron and steel as the automotive and building industries and the railroads are more active in the market, the rise in production continues a very direct outcome of numerous small, well-diversified commitments. The tonnage order is the great exception, which not only is a promise of further improvement but also connotes that the markets have a broad base.

Outstanding in the week's business and exceptional for its size is the American Can Co.'s release of upward of 54,000 tons or 1,200,000 boxes, of tin plate for delivery early in 1933. This is no more than this interest's usual year-end commitment, enabling tin plate mills to produce in the fourth quarter in anticipation of first quarter shipment, but is an appreciable backlog at this time. It is understood that the United States Steel Corp. tin plate subsidiary took 45,000 tons, and independents the remainder. There are indications that the base price of $4.75 a base box will be reduced shortly.

R. F. C. loans are expected almost daily to provide mills over 30,000 tons, chiefly plates, for equipment construction and repair programs by the Pennsylvania, Reading, Baltimore & Ohio and Central of New Jersey railroads. Chicago Great Western has a formal inquiry out for 500 cars, and may buy 10 locomotives. Norfolk & Western is closing on 5000 kegs of spikes in addition to 5000 tons of rails.

Structural steel business is more promising in inquiry than in bookings, which last week totaled 9934 tons. The Cleveland postoffice, requiring 10,000 tons, and the archives building at Washington, 8000 tons, are maturing. Moderate size bridges and public buildings are numerous. Formal award of the Belt Line bridge at New Orleans and the Golden Gate bridge will put 140,000 tons on mill books shortly.

An R. F. C. loan to Ogden, Utah, insures the purchase of 8200 tons of cast iron pipe. Youngstown reports alloy steel production up to 25 per cent, in response to demand, and is encouraged because sheet mill operations are expanding without the aid of automotive needs, which are slow to develop but are nearing.

Allegheny Steel Co., Pittsburgh, has closed on 20,000 tons of basic iron, largely for water delivery, the market on basic being revised to $14, Pittsburgh district furnace. Manchurian pig iron is being offered by the Japanese at Philadelphia and Boston, in competition with Dutch and Indian iron. Demand for iron in most districts is slacker, following the September buying movement, but shipments are heavier. Scrap is reacting technically.

Sensitive to the 50-cent reduction in basic iron at Pittsburgh, the iron and steel composite of STEEL is off 2 cents to $29.30. Greater firmness in galvanized sheets lifts the finished steel composite 10 cents to $47.60. The reaction in scrap lowers this composite 16 cents to $6.96.

Composite Market Averages

	Oct. 8	Oct. 1	One Month Ago Sept., 1932	Three Months Ago July, 1932	One Year Ago Oct., 1931	Ten Years Ago Oct., 1922
Iron and Steel Composite	$29.30	$29.32	$29.32	$29.47	$30.74	$43.60
Finished Steel Composite	47.60	47.50	47.50	47.71	48.22	59.55
Steelworks Scrap Composite.....	6.96	7.12	7.04	6.06	8.50	18.45

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Oct. 8, 1932	Sept., 1932	July, 1932	Oct., 1931
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.76	18.16
Basic, valley	14.00	14.00	14.00	16.50
Basic, eastern, del. eastern Pa.	13.75	13.75	14.25	16.35
No. 2 foundry, del. Pittsburgh	15.76	15.76	15.76	18.16
No. 2 foundry, Chicago	15.50	15.50	15.50	17.20
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	17.75	18.00	18.00
**No. 2X, Eastern, del. Phila.	14.26	14.26	14.76	17.26
Malleable, valley	14.50	14.50	14.50	16.90
Malleable, Chicago	15.50	15.50	15.50	17.10
Lake Superior charcoal, del. Chi.	23.04	23.04	23.04	25.04
Gray forge, del. Pittsburgh	15.63	15.63	15.63	17.53
Ferromanganese, del. Pittsburgh	73.24	73.24	73.24	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	2.00	2.00	2.00	2.40
Connellsville foundry, ovens	2.75	2.75	3.00	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	Oct. 8, 1932	Sept., 1932	July, 1932	Oct., 1931
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
Sheets, No. 24 hot ann., Pitts.	2.10	2.10	2.20	2.40
Sheets, No. 24 galvan., Pitts.	2.80	2.75	2.85	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
Sheets, No. 24 hot ann., Chi.	2.25	2.25	2.35	2.55
Sheets, No. 24 galvan., Chi.	2.90	2.90	3.00	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	4.75
Scrap				
Heavy melting steel, Pitts.	$9.50	9.50	8.35	10.45
Heavy melting steel, eastern Pa.	7.25	7.25	6.25	8.20
Heavy melting steel, Chicago	6.00	6.00	4.50	7.75
No. 1 wrought, eastern Pa.	7.25	7.25	6.25	9.20
No. 1 wrought, Chicago	5.25	5.25	4.00	8.00
Rails for rolling, Chicago	7.25	7.25	6.60	10.50

Sheets

Week's Specifications at Pittsburgh Best of Year—Small Orders Still Predominate

SHEET PRICES, PAGE 47

Pittsburgh—The week's specifications generally touched a high point for any period since last spring, considered especially encouraging in view of the fact that small orders made up the bulk of the tonnage. Some buying by a Detroit district automobile maker brought out prices on No. 20 cold-rolled and No. 20 autobody stock, involving equivalent Pittsburgh bases of about 2.60c for cold-rolled and approximately 2.75c for autobody. As some small orders still are being billed at 2.20c for black sheets, this figure has not disappeared entirely. All large buyers are obtaining 2.10c, and under, in some cases. Galvanized demand is fair, with the market around 2.80c, Pittsburgh.

Boston—Sheet buying is light, few buyers covering for the fourth quarter, although some jobbers have specified slightly heavier. Continued light building operations is a depressing factor. Prices are steadier.

New York—Sheet buying has declined from a week ago, at which time trading apparently was influenced in part by the desire of some buyers to protect themselves against higher prices in the present quarter. The new quarter, however, has not brought strength in some grades.

Philadelphia — While galvanized sheets and certain of the heavier gages of hot-rolled sheets appear firm at the recently announced fourth quarter prices, irregularities have developed in other lines, particularly in cold-rolled sheets.

Youngstown, O.—Continued encouragement is being given to sheetmakers by the slow but steady expansion in volume of new business. Certain district mills rolling autobody material are operating this week, the second successive week of operations in some months. Both black and galvanized sheets, with a sprinkling of blue annealed, are noted in specifications.

Cleveland—The automotive industry at present is contributing very little to the moderate improvement in sheet tonnage. Automotive business for one important producer, which normally supplies a considerable proportion to the builders and partsmakers, recently has been 3 per cent of its total sheet and strip bookings. Chevrolet is understood to have made a small purchase against its recent inquiry; its Fisher Body unit here is practically down, preparatory to resuming on new models the latter part of the month. Current orders are of a small, miscellaneous character. The supply of seconds having been considerably reduced, sales of primes are more in evidence. Despite some mills determination to hold to 2.20c Pittsburgh, for black, 2.10c still is apparent.

Cincinnati — Somewhat better specifications for sheets are noted at mills in this district. Prices are firmer.

Chicago—Sheet demand continues to tend upward at an extremely slow rate. Miscellaneous orders have shown a gradual expansion over the past 30 days with some of the larger users, particularly the automotive industry, expected to be beter buyers over coming weeks. Producers are attempting to eliminate the lower figures prevailing recently on some grades and usually are quoting 2.30c, base, for hot-rolled annealed sheets; 2.95c for galvanized.

St. Louis—Demand for sheets has broadened. Granite City Steel Co., here, reports September bookings the largest of any month this year. Included are 350 tons to be used for manufacturing 1933 Missouri automobile license tags.

Birmingham, Ala.—All sheet mills in this district are doing fairly well, demand holding up.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10

(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, delivered	1.70c
New York, delivered	1.90c
Birmingham, base	1.70c
Philadelphia, delivered	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, delivered	2.01c
New York, delivered	2.05c
St. Louis, delivered	2.07½c
Birmingham, base	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.10c to 2.20c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, delivered	2.25c to 2.35c
*New York, delivered	2.45c to 2.55c
*Philadelphia, del.	2.41c to 2.51c
Birmingham, base	2.35c
St. Louis, delivered	2.47½c to 2.57½c
San Francisco, c.i.f.	2.85c
*Detroit, delivered	2.28½c

GALVANIZED NO. 24

Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.85c to 2.95c
Chicago, delivered	2.90c to 3.00c
Philadelphia, delivered	3.16c
New York, delivered	3.20c
Birmingham, base	3.00c
St. Louis, delivered	3.12½c to 3.22½c
San Francisco, c.i.f.	3.50c

AUTOBODY NO. 20

*Pittsburgh, base	2.65c to 2.75c

FURNITURE

Pittsburgh, No. 10 heavy	2.55c to 2.65c
Pittsburgh, No. 20 light	3.05c to 3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.30c to 2.40c
Gary, base	2.40c to 2.50c
St. Louis, delivered	2.77½c

HEAVY COLD ROLLED NO. 10

*Pittsburgh, base	2.10c
*Gary, Ind. Harbor, base	2.20c
*Chicago, delivered	2.25c
*Philadelphia, delivered	2.41c
*New York, delivered	2.55c
St. Louis, delivered	2.62½c

COLD ROLLED NO. 20

*Pittsburgh, base	2.60c
*Gary, Ind. Harbor, base	2.70c
*Chicago, delivered	2.75c
*Philadelphia, delivered	2.91c
*New York, delivered	2.95c
St. Louis, delivered	3.12½c to 3.22½c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.: Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, delivered	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Buffalo, delivered	1.85½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, delivered	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, delivered	1.75c
New York, delivered	1.87c
Boston, delivered	2.00½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, delivered	1.91c
New York, delivered	1.95c
Boston, delivered	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
*Eastern mills	1.35c

IRON

Chicago, base	1.60c
New York, delivered	1.85c to 1.90c
Philadelphia, delivered	1.81c to 1.86c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chicago, billet	1.60c to 1.75c
Chicago, rail steel	1.30c to 1.45c
Philadelphia, cut lengths	1.86c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base, Pittsburgh

10,000 to 19,999 pounds	1.70c
20,000 to 59,999 pounds	1.65c
60,000 to 99,999 pounds	1.60c
100,000 pounds and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Tin and Terne Plate

Per 100-pound box, Pittsburgh

Tin plate, coke base, cont.	$4.75
Tin plate, coke base, stock	3.85
Long ternes, 24, unassorted	2.80c

Gary, Ind., base 10 cents higher

Alloy Steel

Hot Rolled—F.o.b. Mills

Hot rolled; base 2.45c to 2.65c, mills; differentials to various consumers

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon van.	0.95
4100 .15 to .25 Mo	0.50	9250 (flats)	0.25
		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide, Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. New York	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll, strip, Pitts., Cleve.	1.90c to 2.00c
Worcester, 3 tons over	2.20c

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleveland	70, 10 and 5 off
Washers, c.l., Pitts. dist.	$6.50 to 6.75 off
Do., Chicago district	7.00 to 7.50 off

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$32.00
Light rails, Chicago	$34.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.40c
Spikes, boat, barge, Pitts.	2.65c
Track bolts, Chicago	3.50c
do., standard, jobbers	73 off list
Tie plate, Pitts.	$37.00
Tie plates, Chicago	$35.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 75 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 75 off

Tire bolts ..... 60 and 10 off

Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 75 off

HEXAGON CAP SCREWS

Milled ..... 80-25 off

Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller ..... 75-10-10 off

Headless set screws ..... 75-10 off

Upset, larger than 1 in. ..... 75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Steel sheet piling, Pitts.	1.90c

Bars

Steady Improvement in Demand Continues — Prospects Bright For Better Movement Shortly

BAR PRICES, PAGE 47

Chicago—Steel bar requirements of miscellaneous consumers continue to show gradual improvement. These gains are supported by some betterment in demand from the automotive industry, but farm implement manufacturers still take little tonnage. Jobbers are moving bars at a better rate and recent business shows greater diversification. Railroad requirements are light, with some improvement in prospect. Prices still are tested by only small lots, the usual market being 1.70c, Chicago, for soft steel, 1.50c for rail steel and 1.60c for bar iron.

Boston — Buying of commercial steel bars is light, 1.60c, Pittsburgh, applying on the small tonnage moving into New England. Demand for tool steel is also light.

Pittsburgh—Last week three or four fair-sized forging bar orders were placed, specifications coming from the Detroit district. One customer placed about 300 tons of spring steel and another has contracted for its alloy and carbon bar stock for an initial manufacturing program. Small orders for alloy bars are not improved and the same may be said of soft steel bar demand. The price of carbon bars is firm at 1.60c, base Pittsburgh, with alloy material nominally 2.65c. Full forging quality extras continue to be obtained in many cases for forging quality bars.

Youngstown, O.—Needs of users of common steel bars are expanding in moderate volume. However, the gain in bar mill commitments so far this month has been equal to seasonal for common steel bars. But on alloy steel bars, there has been even more than seasonal demand, leading to the Massillon maker bringing up his activity to 25 per cent of ingot capacity. This latter expansion in production is due to increased requirements by auto partsmakers, although some increase also is noted from miscellaneous lines.

Cleveland—Some releases of steel bar tonnages for new automobile models are expected from several sources this week or next. Ford is understood to be buying alloy spring steel. The market for bars is more active, with miscellaneous business steadily improving. Several carload orders have been received from railroads. For the leading commercial producer here the week's business was the best of the year. Bars are firm at 1.65c, base, Cleveland.

Large Order Placed for Tin Plate; Operations Up

Tin Plate Prices, Page 47

Pittsburgh—Tin plate mills here have now received their division of an order for about 70,000 tons of tin plate which was placed last week by the American Can Co. Deliveries will extend into 1933, although mills can roll at convenience. Initial delivery probably will be made late this month or early in November. The business was divided among several companies with one interest reported to have received about 50,000 tons. Tin mill operations are at 40 per cent, and will continue at this rate or better for at least two weeks. The official price of $4.75 per base box is nominal, in view of an anticipated reduction shortly. Standard Tin Plate Co., Canonsburg, Pa., resumed operations in full Oct. 2.

New York—Important canmakers have not yet indicated their intention to follow the lead of the American Can Co., which recently closed on a portion of next year's requirements. The latter's purchases are estimated at 1,200,000 boxes, or approximately 54,000 tons, of which the American Tin Plate Co. booked 1,000,000 boxes, or about 45,000 tons. Shipments will begin the first of the year at prices expected to be announced in about a month for next season. Indications are that the base price will be about $4.25 per box.

Cold-Finished Steady In Moderate Turnover

Cold Finished Prices, Page 47

Pittsburgh—The cold-finished steel bar market is featured by price firmness in a minimum of 1.70c, Pittsburgh, and the general application of quantity differentials, which properly classify each consumer's order. No important tonnage is either placed or actively pending at Detroit for cold-finished steel and the changes in demand from week to week appear governed by miscellaneous consuming outlets.

Plates

Further Improvement Noted in Miscellaneous Orders — Reading Railroad Buys 400 Tons

PLATE PRICES, PAGE 47

Chicago—Miscellaneous plate demand shows a slight improvement despite continued quietness in requirements of tank builders and railroads. Occasional orders for water tanks are appearing but activity on the part of oil companies is light. The market for large diameter line pipe offers little prospect for improved plate demand. Plates usually are 1.70c, Chicago.

New York—Plate buying is less active than a week ago. Prices are fairly steady at 1.70c, base, Coatesville.

Philadelphia—Reading railroad has placed 400 tons of plates with an eastern Pennsylvania mill for use in car repairs. This is in addition to 600 tons placed with another eastern Pennsylvania mill two or three weeks ago. The remaining tonnage probably will be purchased in fabricated form. The Pennsylvania railroad's requirements of 8000 to 9000 tons of plates for its car program still are pending. Approximately 1000 tons of plates will be required in the 48-inch steel pipe line to be installed by the commissioners of the District of Columbia. The usual carlot price on plates is 1.70c, Coatesville.

Boston—Plates are moving better than most finished steel products in New England and prospective business is good. Some small tank makers are specifying heavily. Several hundred tons are active for state hospital tanks and stand pipes. The price generally is 1.70c, Coatesville.

Pittsburgh — Steel plate fabricators are figuring on several hundred tons for tanks at Washington. An unstated tonnage will be required for some work for the New Orleans federal engineers, which includes a drag line dredge, bids to go in Oct. 10. The market is firm at 1.60c, Pittsburgh, on miscellaneous business though in eastern districts an independent mill continues to quote prices under this equivalent.

Cleveland—Recent improvement in

the volume of miscellaneous plate orders is held by some producers; others note a slight letdown in the week's business. Railroad car repair work is expected to supply some impetus to demand this fall. Boiler shops in this district are inactive. Plates are firm at 1.60c, base Pittsburgh.

Contracts Placed

400 tons, Reading railroad, to an eastern Pennsylvania platemaker; this is in addition to 600 tons placed with another eastern Pennsylvania platemaker recently.

300 tons, three 1,000,000-gallon water tanks, Peoria, Ill., to Chicago Bridge & Iron Works, Chicago.

150 tons, also 50 tons shapes, two steel oil barges, United States engineer, Wshington, to Dravo Contracting Co., Pittsburgh.

105 tons, including 19 tons of sheets, United States engineer, St. Louis, plates to Central Iron & Steel Co., Harrisburg, Pa.

Unstated tonnage, 30 small welded steel pontoons, United States engineer, Montgomery, Ala., to Ingalls Iron Works, Birmingham.

Unstated tonnage, tower and tank, bureau of yards and docks, Cape Hatteras, N. C., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Contracts Pending

1000 tons, for 7000 feet of 48-inch pipe, water commissioners, District of Columbia.

600 tons, 85 helium tanks, Sunnyvale, Calif., dirigible base; bids Nov. 2.

394 tons, including 20 tons of floor plates, navy, Mare Island, Calif., bids Oct. 25, schedule 8857.

200 tons, tanks, Washington.

Unstated tonnage, drag line, New Orleans federal engineers; bids Oct. 10.

Unstated tonnage, steel standpipe, Medfield State hospital, Harding, Mass.; bids in.

Forging Billet Order Takes Full Extras

Semifinished Prices, Page 56

An order for several hundred tons of forging billets was placed last week at $33, base Pittsburgh, plus full extras. The market at $26, Pittsburgh, Youngstown, O., and Cleveland, for sheet bars, billets and slabs is firm on smaller sized orders. Alloy billets sales are light. Wire rods are quiet, and holding at $37 per ton.

Soviet Discovers Nickel

Soviet officials claim to have discovered new deposits of chromite and nickel in the Ural mountains. One new nickel deposit is estimated at 2,000,000 to 3,000,000 tons.

Railroads

Freight Car Purchases Largest For a Year—Steel Buying by Roads Slow to Come Out

TRACK MATERIAL PRICES, PAGE 47

New York—By virtue of the decision of the Pennsylvania railroad to build 1285 cars in its own shops, domestic freight car awards in September reached by far the best total this year, amounting to 1298. Business going to carbuilder shops was negligible, as indicated.

The total for the first nine months is 1687, compared with 8668 in the corresponding period of 1931; 35,680 in 1930 and 70,528 in the first nine months of 1929. Further comparisons follow:

	1932	1931	1930	1929
Jan.	159	100	5,072	13,196
Feb.	35	50	17,027	15,944
March	105	2,166	6,118	12,023
April	0	2,798	1,997	8,205
May	60	20	1,392	7,562
June	0	1,910	998	5,886
July	25	617	1,389	341
Aug.	5	1,304	1,111	2,854
Sept.	1,298	703	576	4,517
9 mo.	1,687	8,668	35,680	70,528
Oct.	.....	.....	980	4,116	19,506
Nov.	.....	.....	35	2,621	6,361
Dec.	.....	.....	11	2,729	9,710
Total	...	.....	10,694	45,146	106,105

Norfolk & Western railroad, in addition to closing Oct. 19 on 5000 tons of 130-pound rails, also closes on 100 wrought steel wheels.

Pacific Fruit Express is inquiring for 150 to 300 steel freight car underframes.

Philadelphia—Norfolk & Western, previously noted as inquiring for 5000 tons of rails, is also inquiring for 5000 kegs of spikes. Baltimore & Ohio has made some routine purchases of sheets and spring steel, while the Reading has closed on an additional 400 tons of plates for its car repair program, bringing its total plate tonnage to 1000 tons. The Reading also bought 80 tons of additional material, and, according to present indications, will cover its remaining needs by orders for fabricated material. This fabricated work may go to carbuilders. The Pennsylvania has yet to act on its rolled steel requirements for the building of 1285 cars.

Pittsburgh—Car repair programs are getting under way but the Pennsylvania, Reading, and Baltimore & Ohio purchases are still awaited. No formal inquiry has been issued for 14,000 tons of plates and car shapes for the Pennsylvania railroad's box cars and there has evidently been some delay in shaping plans and design before prices on steel are asked. Light rails are nominal at $32 per ton and a decidedly listless market which are nominally 2.40c and 1.85c, continues for spikes and tie plates, Pittsburgh mill, respectively.

Cleveland—Railroad steel tonnage still is in the prospective stage, with new releases restricted to small lots for routine repair work. New York Central is understood to have 15,000 to 20,000 tons of rails along its right of way to be laid, but other roads have cleaned up their stocks, though not anticipating further rail purchases this year. Though car shops in this district are more active, heavy tonnage orders have not developed.

Chicago—Extreme dullness in the freight car market in this district for many months has been relieved slightly by inquiry of the Chicago Great Western railroad for 300 box cars and 200 gondolas. Purchase of ten passenger locomotives also is contemplated, although definite inquiry is lacking. Steel orders from railroads generally show little change. Rail production is being maintained on a limited basis but lack of additional orders makes the outlook for future operations rather poor. Santa Fe railroad is considering contracting for 40,000 tons of rails but plans of other carriers are indefinite. Releases of track fastenings are fairly steady but light. Denver & Rio Grande Western railroad is taking bids on preparatory work in connection with the construction of the Dotsero cut-off in Colorado. Rock Island railroad is scheduled to return about 1300 employes to shops Oct. 12 for a 10-day period.

Locomotives Placed

Navy, Mountain View, Calif., one switching locomotive, to Atlas Car & Mfg. Co., Cleveland, bids Sept. 13.

Rail Orders Placed

Bureau of yards and docks, navy, Washington, for naval station Sunnyvale, Calif., 550 tons, 80 and 100-pound relaying rails, to United Commercial Co. Inc., San Francisco, total bid $63,375, Sept. 28.

Car Orders Pending

Chicago Great Western, 300 box cars, 200 gondolas.

Panama, one railway motor car, bids Oct. 10.

Structural Shapes

Bridge Work Leads in Moderate Week—10,000 Tons Up for Cleveland Postoffice; 8000 Tons for Washington Archives Building — 6000 Tons Pend in Middle West

STRUCTURAL SHAPE PRICES, PAGE 47

New York—Bridges continue to make up the bulk of structural steel awards, the total being light. New inquiry, however, is running ahead of current lettings. The largest inquiry in the East is at Washington where bids close Oct. 28 on the Archives building, taking close to 8000 tons. Plain material prices are generally unchanged at 1.70c, eastern mill, although this is being shaded on attractive work, and is adversely influenced by low foreign material.

Boston—Led by close to 800 tons for state bridges at Wellesley, Mass., structural lettings top 1000 tons.

Close to 2500 tons for the Point of Pines bridge is on the boards, bids on the substructure being in, the latter contract taking close to 500 tons of steel piling.

Philadelphia—Pending the issuance of specifications for the 8500-ton customs house building here, the local structural market continues dull. The largest job on which immediate action is expected is the 1000-ton Benning bridge at Washington. Plain shapes are unchanged at 1.70c, nearest mill.

Pittsburgh—Award is expected daily on the 500-ton bridge at Beaver, Pa., which a Pittsburgh contractor will place. A state highway letting of Oct. 20, will include a few small structural jobs. Awards to local structural shops were fewer last week, and the number of new pending jobs also decreased. Fabrication on the New Orleans Belt Line bridge probably will not get under way for some months, and there have been no new significant developments toward financing. Fabricators' structural prices continue erratic with a 4000-ton job recently going for about $38 a ton. Considering a 1.50c base for plain material, this left a 46-cent shop cost. The price of small sized mill orders for plain material is fairly firm at 1.60c base, Pittsburgh.

Cleveland—Bids will be received at Washington, Nov. 15, on the Cleveland postoffice superstructure, requiring approximately 10,000 tons of shapes the largest job here in many months. Plans will be available about Oct. 15. Award of 114 tons for the Fostoria, O., postoffice, and 100 tons for a powerhouse at Shelby, O., feature the week's business. For a state bridge in Hamilton, O., 190 tons are pending, bids Oct. 14. Miscellaneous industrial jobs are small.

Chicago—Bridge work still predominates in the structural market. A number of small bridges are pending in mid-western states, while private work still is almost completely absent. Awards are limited principally to small lots while among new inquiries only bridge work involves individual items of more than 1000 tons. Bridges remaining to be placed in Oklahoma, North Dakota, Missouri and Nebraska total more than 6000 tons.

Contracts Placed

1500 tons, highway bridges, Florida, to McClintic-Marshall Corp., Bethlehem, Pa.

1200 tons, contract No. 2, Chippewa river bridge, Wisconsin, to Worden-Allen Co., Milwaukee.

780 tons, army air base, Alameda, Calif., to McClintic-Marshall Corp., Bethlehem, Pa.

775 tons, four state bridges, Los Angeles county, California, to McClintic-Marshall Corp., Bethlehem, Pa.

775 tons, three state bridges, Wellesley, Mass., to Boston Bridge Works, Boston.

650 tons, Chippewa river bridge, Wisconsin, to McClintic-Marshall Corp., Bethlehem, Pa.; general contract previously reported to Industrial Contracting Co., Minneapolis.

600 tons, laundry building, Little Falls, N. Y., to McClintic-Marshall Corp., Bethlehem, Pa.

350 tons, highway bridge, Stamford, Conn., to American Bridge Co., Pittsburgh.

300 tons, highway bridge, Paradise, Mont., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

275 tons, state bridge, Arbado, Wyo., to Minneapolis-Moline Power Implement Co., Minneapolis.

275 tons, highway bridges, Oklahoma, to Kansas City Structural Steel Co., Kansas City, Mo.

218 tons, highway bridges, Illinois, to Clinton Bridge Works, Clinton, Iowa.

215 tons, state bridge, federal aid project 262, section C, Cheyenne, Okla., to Virginia Bridge & Iron Co., Roanoke, Va.; approximately 50 tons of reinforcing steel to Concrete Engineering Co., Oklahoma City, Okla.; L. M. Mackey, Oklahoma City, contractor.

190 tons, highway bridge, Vermillion county, Indiana, to Vincennes Bridge Co., Vincennes, Ind.

180 tons, granite shed and crane runway, West Chelmsford, Mass., to Lackawanna Steel Construction Co., Buffalo.

170 tons, postoffice, Fort Myers, Fla., to Ingalls Iron Works Co., Birmingham, Ala.; through Prescott-White Corp., New York.

160 tons, building, Lee Marble Works, Lee, Mass., to Bethlehem Fabricators Inc., Bethlehem, Pa.; through Leo Caproni, contractor.

160 tons, highway bridge, Montevideo, Minn., to American Bridge Co., Pittsburgh.

160 tons, postoffices, Patchogue and Norwich, N. Y. to Progressive Iron Works, New York.

160 tons, cancer hospital, Philadelphia, to McClintic-Marshall Corp., Bethlehem, Pa., through John McShain, local contractor.

140 tons, highway bridge, Harper county, Oklahoma, to Missouri Valley Bridge & Iron Co., Leavenworth, Kans.

140 tons, including 15 tons of machinery, state bridge, Deep river, Wahkiakum county, Washington, to Washington Iron Works, Seattle.

128 tons, also 27 tons of concrete bars, state bridge, St. Mary's river, Corvallis, Oreg., to unstated interests.

120 tons, gates and hoists for Pine Canyon dam, Pasadena, Calif., to Consolidated Steel Corp., Los Angeles.

114 tons, postoffice, Fostoria, O., to Wheeling Structural Steel Co., Wheeling, W. Va.

110 tons, highway bridge, Cadeo county, Oklahoma, to J. B. Klein Iron Foundry Co., Oklahoma City, Okla.

102 tons, bridge, Williamston, Mich., to Whitehead & Kales Co., Detroit.

100 tons, shapes and bars, postoffice, Cedar City, Utah; shapes to Provo Foundry & Machine Co., Provo, Utah; bars to Steel Engineers Corp., Salt Lake City; Jacobsen Construction Co., Salt Lake City, contractor.

100 tons, joists and bars, school, Pompton Lakes, N. J.; joists to Kalman Steel Corp.; bars to J. T. McCoy, New York; F. and C. Haerter, West New York, N. J., contractors.

100 tons, postoffice, Sheybogan, Wis., to unstated fabricator; 50 tons of reinforcing bars awarded Concrete Engineering Corp.; through James Devault, Canton, O., contractor.

100 tons, powerhouse, Shelby, O., to Burger Iron Co., Akron, O.

Awards Compared

	Tons
Awards, week ended Oct. 8	9,934
Awards, week ended Oct. 1	10,764
Awards, week ended Sept. 24	9,499
Awards, this week in 1931	32,990
Av. weekly awards, 1931	34,236
Av. weekly awards, 1932	15,191
Av. weekly awards, Sept.	10,688
Awards to date, 1931	1,561,282
Awards to date, 1932	622,858

Contracts Pending

10,000 tons, postoffice, Cleveland; bids Nov. 15, supervising architect, treasury department, Washington.

8000 tons, Archives building, Washington; bids Oct. 28.

3000 tons, buildings, marine hospital, Stapleton, Staten Island, N. Y.; Royal-Rice Co. Inc., New York, low exclusive of additions 1 and 2; Psaty & Fuhrman Inc., New York, low with additions.

2000 tons, government courthouse, Jacksonville, Fla.

1800 tons, addition to mercantile building, Indianapolis.

1800 tons, postoffice, Albany, N. Y.; Kenney Bros. Inc., New York, low.

1400 tons, hotel and apartment, Devon, Pa.; revived, but still depending for ultimate action on successful completion of financing.

1200 tons, federal office building, Omaha, Nebr.; J. P. Cullen & Sons Inc., Janesville, Wis., low.

670 tons, Patterson Park junior high school, Baltimore; bids being opened; 550 tons of bars also required.

400 tons, shapes and bars, postoffice, Oak Park, Ill.; bids Oct. 24.

275 tons, bridges, Lincoln county, Oklahoma; state highway commission, bids Oct. 11.

250 tons, tunnel lining, San Jacinito tunnel, metropolitan water district, Los Angeles; bids soon.

200 tons, bridge, Boston & Albany railroad, Springfield, Mass.

190 tons, state bridge, Hamilton, O.; contractor bids, department of highways, Columbus, O., Oct. 14.

175 tons, postoffice, Port Chester, N. Y.; bids Oct. 25.

175 tons, galvanized steel towers, department of agriculture, Washington; bids Oct. 11.

140 tons, L street bridge, Washington; Tidewater Construction Co., Gloucester Point, Va., low.

115 tons, postoffice, Williamsport, Pa.; general contract awarded to R. D. McDaniel Co., New Brighton, Pa.

110 tons, postoffice addition, Billings, Mont.; W. D. Lovell, Minneapolis, low.

110 tons, shapes and bars, postoffice, Silver City, N. Mex.; H. W. Underhill Construction Co., Wichita Falls, Kans., low.

100 tons, postoffice, Greenville, Pa.; Ideal Construction Co., Gary, Ind., low.

100 tons, postoffice, Stroudsburg, Pa.; bids Nov. 1.

100 tons, alterations, hangar building, Anacostia, Washington; Belmont Iron Works, Philadelphia, low.

Ore Shipments Lower, as Consumption Increases

Iron Ore Prices, Page 56

Cleveland—Shipments of Lake Superior iron ore in September amounted to 641,228 tons, compared with 721,587 tons in August, according to the Lake Superior Iron Ore association. This further reflects efforts to reduce stock at lower lake ports and furnaces, as September consumption will show an increase, pig iron production having gained 16.2 per cent. For the year to Oct. 1, shipments total 2,391,155 tons.

United Kingdom in August imported from the United States 720 chucks for machine tools, valued at $1796.

Concrete Bars

Awards Are Larger, Topped By 1300 Tons for Ulster County, New York, Highways—Public Work Still Yields Bulk of Business, Private Jobs Taking Small Lots

REINFORCING BAR PRICES, PAGE 47

New York—Concrete bars are active, more than 2000 tons having been placed, mainly for highways and bridges. A good part of this business is mesh. An additional tonnage is up for New Jersey, closing Oct. 24, and more than 1000 tons are active for New York state hospitals. Bids are in on a large volume for New York highways. Prices on billet bars in small lots are 2.10c, New York, but attractive orders bring out shading.

Boston—Reinforcing steel is more in demand, highways and bridges being the principal outlets. Several hundred tons pend for Massachusetts public work and a fair tonnage is required for the section C incline for the East Boston tunnel, bids Oct. 17. Prices on small lots are fairly steady, but shading prevails on larger orders.

Philadelphia—Award of two contracts totaling 1500 tons, principally mesh, for roadwork in New Jersey, features the reinforcing steel market here. Approximately 250 tons of bars for the Benning bridge, Washington, are reported placed. A high school at Baltimore will require 550 tons. Rail steel bar prices have stiffened at 1.35c, eastern mill, despite the fact billet steel bars are weak at 1.55c, Pittsburgh, in cut lengths.

Pittsburgh—State highway awards still are prominent. Following distribution of some small orders by Virginia, Pennsylvania will close bids Oct. 20 on another letting for concrete reinforced roadway and some small bridges. Tonnage entered for rolling by local reinforcing bar mills is made up mainly of 30, 40 and 50-ton lots. On new billet steel a base of 1.60c appears to apply.

Cleveland—More inquiries from industrial sources are noted by some concrete bar fabricators, but individual tonnages still are small. Several substantial lots still are pending for state bridges, and approximately 150 tons are required for three new state bridge jobs, on which general contracts are to be awarded Oct. 14. Great Western Oil Co. placed 75 tons for a retaining wall at Cleveland.

Chicago—Reinforcing bar orders are light and generally unchanged. A fair volume of business is pending for road work in nearby states, although it is doubtful whether all of the present programs will be carried out in the near future. Some additional small lots for work in Illinois are being placed. Prices continue under pressure, some exceptionally low bids appearing in connection with public work. Rail steel bars average around 1.30c to 1.45c, with billet bars 1.60c to 1.75c.

Awards Compared

	Tons
Awards, week ended Oct. 8	**5,003**
Awards, week ended Oct. 1	**2,769**
Awards, week ended Sept. 24	**7,867**
Awards, this week 1931	**4,125**
Av. weekly awards 1931	**6,808**
Av. weekly awards, 1932	**4,177**
Av. weekly awards, Sept.	**4,523**
Awards, to date, 1931	**284,587**
Awards, to date, 1932	**171,277**

Contracts Placed

1300 tons, mesh, two highway sections, Ulster county, New York, to Truscon Steel Co., Youngstown, O.; through M. A. Gammino Construction Co., Prvidence, R. I., contractor.

1100 tons, principally wire mesh for roadwork in Bergen and Burlington counties, New Jersey, to Kalman Steel Corp., through William Eisenberg, Camden, N. J., general contractor.

400 tons, highway, route 40, section 7, Browning road to Kings highway, Burlington county, New Jersey, to Truscon Steel Co., Youngstown, O.; Edward H. Ellis Inc., Westfield, N. J., contractor.

350 tons, highway and small bridges, Marlton to Medford, Burlington county, New Jersey, to Igoe Bros., Newark, N. J.; through Charles D. Prosser, contractor.

300 tons, mesh, highway, Rensselaer county, New York, to American Steel & Wire Co., New York; through New Haven Road Construction Co.

250 tons, Benning bridge, Washington, placed with unnamed sellers by Kaufman Construction Co., Philadelphia, general contractor.

200 tons, highway, Hartford-Willimantic (Andover) Conn., to Wheeling Corrugating Co., Wheeling, W. Va.; Amos D. Bridge's Sons Inc., Hazardville, Conn., general contractor.

180 tons, four state bridges, Los Angeles county, California, to Pacific Coast Steel Corp., San Francisco. Reported last week to unnamed interest.

178 tons, highway, Schoharie-Middleburg, New York, to American Steel & Wire Co., New York; through Miller Bros. Construction Co. Inc., White Plains, N. Y., contractor.

160 tons, bridges and overflow, Gasconade river, Pulaski county, Missouri, to Sheffield Steel Corp., Kansas City, Mo.; Maxwell Construction Co., Columbus, Kans., general contractor.

151 tons, state bridges, Shasta and Monterey counties, California, to unnamed interest.

150 tons, bridges, S.A.P. 829, sections A and C, Hammon and Strong City, Okla., to Concrete Engineering Co., Oklahoma City; L. M. Mackey, general contractor.

140 tons, highway, Millerton to county line, Dutchess county, New York, to Concrete Steel Co., New York, with American Steel & Wire Co. supplying mesh; Thomas A. Brogan, Yonkers, N. Y., contractor.

118 tons, three state bridges Columbia county, Washington, and federal highway project, Yakima county, Washington, to Northwest Steel Rolling Mills, Seattle, and unnamed Portland interest.

106 tons, bridge, federal aid project 118-A, Kane county, Utah, to Sheffield Steel Corp., Kansas City, Mo.; Schuyler, Young & Anderson, Salt Lake City, contractors.

100 tons, Illinois road work, to American System of Reinforcing, Chicago.

Unstated tonnage, state bridges, Wayne and McDowell counties, West Virginia, to West Virginia Rail Co., Huntington, W. Va.; R. W. Brown, Princeton, W. Va., contractor.

Contracts Pending

550 tons, Patterson Park junior high school, Baltimore; bids opened.

495 tons, state highway work, Los Angeles county, California, bids Oct. 19.

250 tons, tunnel lining, San Jacinito tunnel, Metropolitan water district, Los Angeles; bids soon.

225 tons, state highway work in Los Angeles county, California; bids Oct. 19.

125 tons, section C, traffic tunnel, incline to East Boston portal; bids Oct. 17, Boston transit department.

110 tons, mesh, highway route S-28, section T-A Rue's lane to Matawan road, bridge, Middlesex county, New Jersey; bids Oct. 24.

100 tons, highway, Pine Bush to Ellenville, N. Y.; bids in Oct. 4.

Bolt, Nut, Rivet Sales Better, in Small Lots

Bolts, Nuts, Rivets Prices, Page 47

Pittsburgh—Rivet sales were better last week with several carload lots of large sizes being bought by two railroads which had been out of this market for more than a year. Approximately 500 tons of bolts, nuts, and rivets is the aggregate placed on the needs of the Pennsylvania railroad to build 1285 box cars. Prices have been received on this material but award is not announced. Prices are firm at 75 off list for carriage and machine bolts and rivets generally 2.25c.

Philadelphia — Sellers of bolts, nuts and rivets expect early placement of a substantial tonnage by the Pennsylvania railroad for the 1285 freight cars to be built in company shops. Recent demand from jobbers is featured by an order for 250 kegs of bolts and nuts. Bolts and nuts are unchanged at 75 off. and rivets are untested at 2.25c, Pittsburgh.

Cleveland—Further gains are noted in volume of nut, bolt and rivet orders. Practically all railroads obtaining supplies here have increased releases. Automotive demand is slow, but builders are working out programs and indicate business will be forthcoming the latter part of this month. Some good inquiries have been received from agricultural implement interests. Prices are steady.

Chicago—Occasional increases are noted in specifications for bolts, nuts and rivets from small consumers, but demand is poor from the farm implement and railroad industries. Little change has been noted in business so far this month, following a fair increase in September. Prices are steady and unchanged.

Protests Railing Award

Pittsburgh—Pressed Steel Car Co., Pittsburgh, whose bid of $9.55 per lineal foot was low for 2500 feet of fence railing for the West Carson street improvement, Pittsburgh, has protested award of the business to the Ft. Pitt Malleable Iron Co. on a bid of $10.95 a foot.

Pipe

R. F. C. Finances 8200-Ton Project in Utah—1000 Tons Placed in Montana

New York—New inquiry for cast pipe is light. Active volume pending is probably under 2000 tons, including 800 tons for a state hospital. Utilities continue light buyers. Prices are steady. Extensive highway construction is lending some support to cast and corrugated metal pipe demand.

Boston—Since the purchase of close to 1400 tons of cast pipe by a south shore town, demand has slowed up and sales are in small lots. Prices are unchanged. Standard pipe is moving slowly. A Pittsburgh mill booked about 50 tons of steel pipe for the City Oil Co. project at Bangor, Me.

Pittsburgh—The tubular products market shows no major improvement. Oil country goods and merchant pipe tonnage in September was under August for some mills, thereby establishing a new low for them. Other mills report a moderate increase in demand for tubular products. Application of discounts of a month ago on steel pipe are general in the market.

Cleveland—Demand for pipe here is coming principally from jobbers, in occasional carload orders. Building requirements are light.

Chicago—Orders involving lots of more than single carloads are infrequent in the cast pipe market. Inquiry also is quiet. A fair volume of work is pending and in prospect. Producers look for continued quietness in orders the rest of the year. Financing problems continue the important factor in deferring action on many projects.

Cast Pipe Placed

1000 tons, 2 to 10-inch class 150, Deer Lodge, Mont., to unnamed interest; Lease & Leigland, Great Falls, Mont., general contractors.

400 tons, Scarsdale, N. Y., to Central Foundry Co., Birmingham, Ala.

350 tons, White Plains, N. Y., to Donaldson Iron Co., Emaus, Pa.

300 tons, for highways in New York state, to Donaldson Iron Co., Emaus, Pa.

275 tons, Yonkers, N. Y., to Donaldson Iron Co., Emaus, Pa.

200 tons, state hospital, Poughkeepsie, N. Y., to United States Pipe & Foundry Co., Burlington, N. J.

125 tons, 4 and 6-inch class 150, Redwood City, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, 20-inch centrifugal, Seattle water department, to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, Buffalo, United States Pipe & Foundry Co., Burlington, N. J.

Cast Pipe Pending

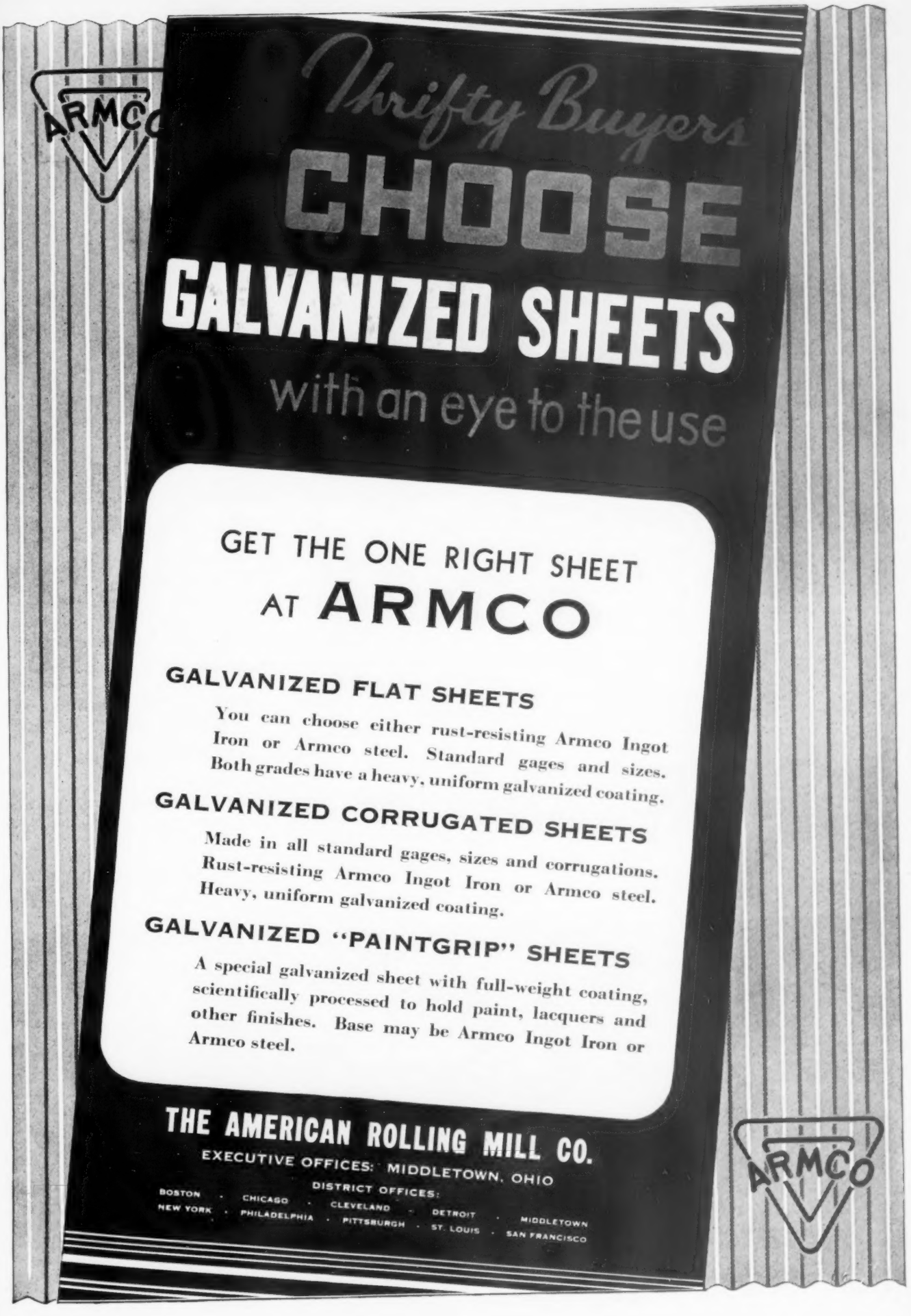
8200 tons, Ogden, Utah, water system; financed by Reconstruction Finance Corp.'s purchase of $645,620 of revenue bonds.

320 tons, 12-inch, Fortress Monroe, Va.; bids Oct. 15.

200 tons, Sing Sing prison, Ossining, N. Y.

Steel Pipe Pending

Unstated tonnage, 51,700 feet, 1½-inch and under, welded galvanized pipe, navy; Tay-Holbrook Inc., San Francisco, low f.o.b. works. Several other mills have same bids for delivery to east or west ports named in schedule. Material is for trans-shipment to Cavite, P. I.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CHOOSE
GALVANIZED SHEETS
with an eye to the use
GET THE ONE RIGHT SHEET
AT ARMCO
GALVANIZED FLAT SHEETS
You can choose either rust-resisting Armco Ingot Iron or Armco steel. Standard gages and sizes. Both grades have a heavy, uniform galvanized coating.
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Made in all standard gages, sizes and corrugations. Rust-resisting Armco Ingot Iron or Armco steel. Heavy, uniform galvanized coating.
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NEW YORK · PHILADELPHIA · PITTSBURGH · ST. LOUIS · SAN FRANCISCO
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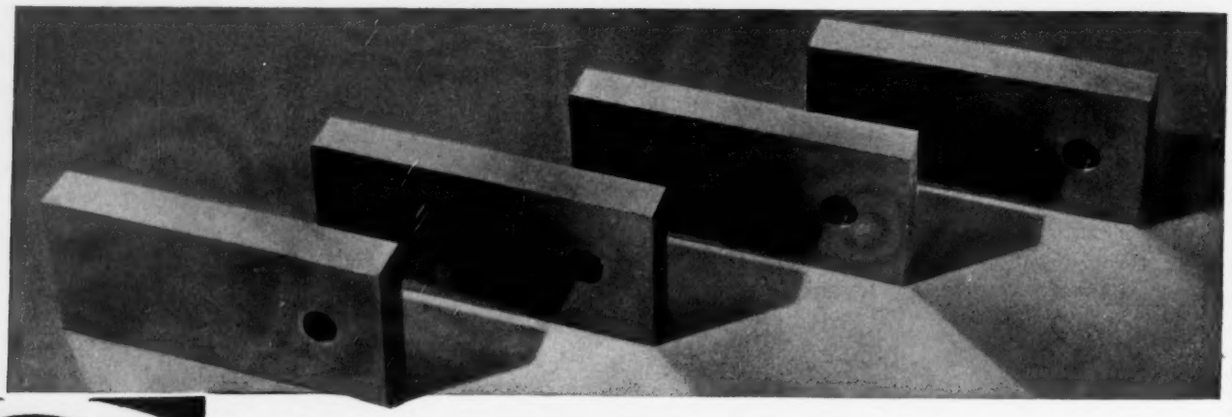

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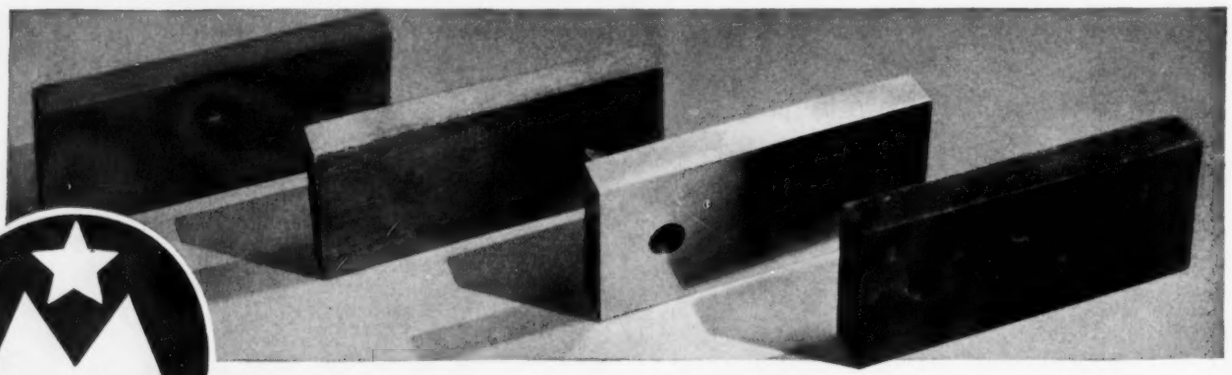

INDICATORS

Strip

Small Orders and Some Automotive Releases Help Production—Prices Holding Well

STRIP PRICES, PAGE 47

Pittsburgh — In the absence of large inquiries for hot or cold-rolled strip, the market is made up of small orders from a fairly diversified group of customers. Pontiac and Chrysler have ordered some hot-rolled strip recently from the Detroit district. Partsmakers for some of the larger automobile concerns are taking in more strip steel than required so far by the manufacturing programs of their buyers. The base of 1.45c, Pittsburgh, for hot-rolled strip is firmer than the nominal cold market of 2.00c. There continue to be more orders at 2.00c for cold-rolled although concessions to 1.90c are prevalent.

Worcester, Mass. — Cold-rolled strip sales are small, but well distributed. Most business is in narrower widths. Prices at 2.20c, Worcester, are generally firm, but this figure is being shaded on a few larger orders.

New York—Strip prices here continue to hold at 1.45c, Pittsburgh, for hot-rolled in car lots, and 2.00c, for cold-rolled. General buying is comparable to the improved volume of a week ago. Consumers affiliated with the textile industry continue active.

Youngstown, O.—Improved demand for hot and cold-rolled strip, expansion coming gradually, continues to lead to increased production. While automotive releases are of fair size for early October, intimations appear of somewhat larger releases for the latter half, presumbaly due to new model requirements of several auto interests.

Cleveland—Inquiries and specifications for strip continue to improve moderately, with comparatively little aid from the automotive industry. Among miscellaneous users, demand for household hardware has picked up recently. Hot-rolled strip is firm at 1.45c, base, Pittsburgh, for the larger consumers, and 1.50c for small lots. In cold rolled, while some mills are holding firmly to 2.00c, base, Cleveland, 1.90c is being quoted more frequently.

Chicago—Orders for small lots of steel strip show additional gains and production has increased to around 10 per cent. Changes in requirements in all cases are small and producers anticipate no marked gains for some time. Automotive requirements are slightly larger than during recent weeks. Prices continue at 1.55c, Chicago, for hot strip and 2.00c, Pittsburgh-Cleveland, for cold strip.

Steel Operating Rate Gains Another Point, to 19

Pittsburgh—After continuing at 16 per cent last week, steel ingot operations will go this week to 17 based on continued small-lot orders. Semifinished steel production will be accelerated shortly with demand of tin mills for sheet bars. Active blast furnace schedules here number 9 out of 54 steelworks stacks. Four belong to Carnegie Steel Co. and five to independents. Finishing mill schedules are difficult to maintain with tin plate leading at 40 per cent, strip about 15 per cent, pipe under 10 per cent and bars, plates and shapes around 15 per cent.

Operations, week ended Oct. 8	**19**
Operations, week ended Oct. 1	**18**
Operations, week ended Sept. 24	**17**
Operations, one year ago	**29**
High for 1932, Feb. 6	**28.5**
Low for 1932—July 9	**12**

Philadelphia—Eastern steelmaking operations have advanced fractionally to 15 per cent. The Pencoyd, Pa., producer has put on two furnaces, following a suspension of a week, and another eastern Pennsylvania mill has put a furnace in operation, the first in several weeks.

Cleveland—Steel ingot production here for the week ended Oct. 8 continued at 23 per cent for the fifth consecutive week. This also is the rate now scheduled for the current week, although one producer may light another open hearth, depending upon developments in the fore part of the week. Corrigan, McKinney Steel Co. and American Steel & Wire Co. each has three units active, Otis Steel Co. two.

Chicago—Ingot production increased slightly during the past week to 17 per cent. The outlook for coming weeks remains uncertain, with some additional improvement anticipated by certain interests. Blast furnace schedules are unchanged at 8 active stacks out of 36. Finishing mill operations generally were slightly heavier during the past week.

Buffalo—Staggered operations put the steelmaking rate here up to 19 per cent for the week ended Oct. 8, and will lower it again to 11 per cent in the week ended Oct. 15.

Birmingham, Ala. — Steelmaking capacity is under a little less pressure and while the 30 per cent rate still holds, a decline of a point or two shortly would not be unexpected.

Warehouse Gain Small But Upward March Holds

New York—Steel buying out of warehouse continues light, aggregate volume last month being disappointing and only a spotty gain thus far this month. Prices still are unsettled, but foreign competition appears less severe as some distributors of imported steel have raised their prices. Demand for pipe, in comparison with the bulk of the warehouse list, holds slightly better.

Boston — Improvement in warehouse volume is barely noticeable, although in spots there are some slight gains.

Philadelphia—Warehouse trading has shown little improvement this month. September business showed a decline from August. Prices are unchanged.

Pittsburgh—Steel products from warehouse are moving at a pace little changed from two weeks ago. Small orders still predominate. Prices are unchanged.

Detroit—October has opened with the rate of increase of September carrying over. Volume continues disappointingly light for the season, but the trade continues convinced that it is heading into a broader market.

Cincinnati—Jobbers here look forward to improvement, but orders so far disclose only a meager increase over August. Prices are firm and unchanged.

Chicago—Warehouse business is maintained better than usual for this season. Orders are small, but have increased in number over the past four to six weeks. Prices are unchanged.

St. Louis—Aside from further slight improvement in demand from the general manufacturing trade, iron and steel warehouse interests report no noticeable change from conditions obtaining during several weeks.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Philadelphia, delivered	13.76 to 14.26
Virginia furnace	17.25
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	**18.90**
Buff., all-rail, Newark	**17.28**
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	**19.40**
Buffalo, all-rail, Newark	**17.78**
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.26 to 14.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	14.76 to 15.26

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.00
Pittsburgh, delivered	14.63 to 15.13
Eastern Penn., del.	13.50 to 14.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville furnace	$2.00 to 2.15
Connellsville foundry	2.75 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania New Jersey furnaces (Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports (Nominal)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.00 to 10.25
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

(Nominal)

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50%	22 cents
Brazilian, 46-48%	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bassemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	26.00 to 28.00
Forging, Chicago	**33.00**
Forging, Pittsburgh	33.00
Forging, Philadelphia	37.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82%, tidewater, duty paid	$68.00
Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	25.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	**10.50**
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	**137.50**
Spot, 1 ton, frt., all., lb.	**8.50**
Do, under 1 ton	**9.00**
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb. cont.	0.80

†Carloads. Differentials apply to quant.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$12.00
Washed gravel, import duty paid tide, gross ton	18.50

Pig Iron

Shipments Continue Upward—Demand in Middle West More Active—Japanese Offer Iron

PIG IRON PRICES, PAGE 56

Pittsburgh — Upward of 20,000 tons of basic pig iron has been allocated to several sources by the Allegheny Steel Co. Shipments have already begun by an all-river route to the Brackenridge, Pa., plant. The price is not divulged at this time although it is reliably reported to be somewhat less than the price at which a blanket contract was closed six months ago. Foundry iron appears a shade more active with three inquiries involving 800 to 1000 tons. Sales are restricted to carlots and occasional 50, 75 and 100-ton orders. The market on small lots is fairly well maintained, with $15 base, Pittsburgh district furnace, nominal for foundry, malleable and bessemer iron. In view of the recent order for basic iron a $14 base appears to be more representative.

Boston—Long unsettled by foreign pig iron, the price situation is further aggravated by the offering of several grades of Japanese Manchurian iron in southern New England at low quotations. With the yen at a discount of nearly 50 per cent, this iron could be delivered at very low figures. Meanwhile buying is slack. Buffalo iron still is available at $14 furnace, but the grain movement has stiffened water rates. Dutch iron is offered close to $13.50, shipping point. Eastern Pennsylvania is nominally $16.50 delivered; Everett, Mass., at $16 minimum, furnace, while Indian is available at $15.50, dock.

New York—Sales for the week total approximately 1200 tons, with little pending,. Buffalo iron is holding at $14.50, base, furnace, and eastern Pennsylvania iron at $13 to $13.50, furnace.

Philadelphia—Purchase of 500 tons of gray forge iron by a Danville, Pa., consumer features an otherwise listless market. Domestic prices are unchanged but Royal Dutch iron appears stronger at $13.50, port, with concessions of 50 cents on especially good tonnage. Domestic producers are showing some concern over reported cheap offerings by Japanese sellers. It is reported that a Delaware river pipemaker has placed a trial order for 100 tons of Far East iron.

Buffalo—The crest of the recent buying wave has passed, but orders continue to be placed and the situtation is much better than at any time in the past six months. Prices are firm at $16, base, furnace, for local delivery. Occasionally $14.50 is shaded for shipment to eastern points. Barge shipments have practically ended for the season.

Youngstown, O.—None of the Allegheny Steel Co.'s basic pig iron order seems to have been placed with district blast furnaces, since at least partial water delivery is offered by the active Pittsburgh competitors. Some district steel company furnaces, it is intimated, are willing to supply pig iron from stocks for consumers of such grades as they produce.

Cleveland—Railroad car shops have placed some orders for pig iron, buying ahead from one to two months. The automotive industry now is not active in the market, but some builders are asking foundries for prices, and this probably will be reflected in sales and shipments in the near future. Shipments so far this month are about 18 per cent heavier than in the comparable period last month. The week brought out some additional inquiries for moderate size lots, but not the volume as in the early part of September, preceding the buying movement in that month. Orders also are down, to approximately 4000 tons for the week. Prices are unchanged.

Cincinnati — The market for pig iron is improving gradually due to a better melt in stove and jobbing foundries. An Indiana melter, inquiring for 1000 tons, placed 500 tons outside this market, but may buy another 500 tons later.

Chicago — Pig iron demand is showing consistent improvement. While seasonal factors account for part of recent gains, the upturn has been beter sustained than was true at this time during the past two years. An encouraging feature is the appearance of larger individual orders. Shipments during October are expected to show an increase of around 50 per cent over September tonnage, following a similar gain last month over August. Better demand from the automotive industry is responsible for some of the recent increase. There is a strong belief that farm implement operations will be commenced during October. The $15.50, furnace, price for No. 2 foundry and malleable is being adhered to closely. Southern iron continues $16.01, delivered.

St. Louis—The leading local producer reports September shipments the best so far this year. Deliveries from southern blast furnaces to consumers in this district also were satisfactory.

Birmingham, Ala. — The Sloss-Sheffield Steel & Iron Co. has blown in one of it blast furnaces here, producing upward of 400 tons daily.

Coke

Movement to Foundries Making Headway Slowly— Larger Sales Of heating Grades Noted

COKE PRICES, PAGE 56

Pittsburgh—Little furnace coke is being placed at over $2, desirable orders bringing somewhat less. Foundry coke is nominally $4.25 for premium brands and $2.75 for ordinary grades. Shipments are light.

New York—Metallurgical coke specifications show only mild improvement. While further gain was expected, trade sentiment is not as cheerful as a month ago. Some leading sellers attribute this to uncertainty over the coming national elections.

Cincinnati—Gains in shipments of by-product foundry coke are holding, with confidence expressed that the melt is definitely up from the low point reached last summer. Quotations are unchanged.

Chicago—Activity in by-product coke continues to expand, aided by the seasonal increase in shipments of heating fuel. Foundry coke consumption is tending upward, although the recent improvement has been slight. The market on the latter continues $7, ovens, for outside delivery, and $7.75, delivered, Chicago.

St. Louis—Deliveries are fairly well maintained to consumers here and in the West and Southwest. Considerable improvement is noted in demand for heating coke.

Birmingham, Ala.—A better feeling exists in the coke market as shipments are holding up. Production is unchanged. The large producers hold to $4.50, base for by-product foundry coke.

Scrap + Baling = $$$

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BALING PRESSES

HYDRAULIC PRESSURE PUMPS

HYDRAULIC STRAIGHTENERS

SPECIAL HYDRAULIC PRESSES

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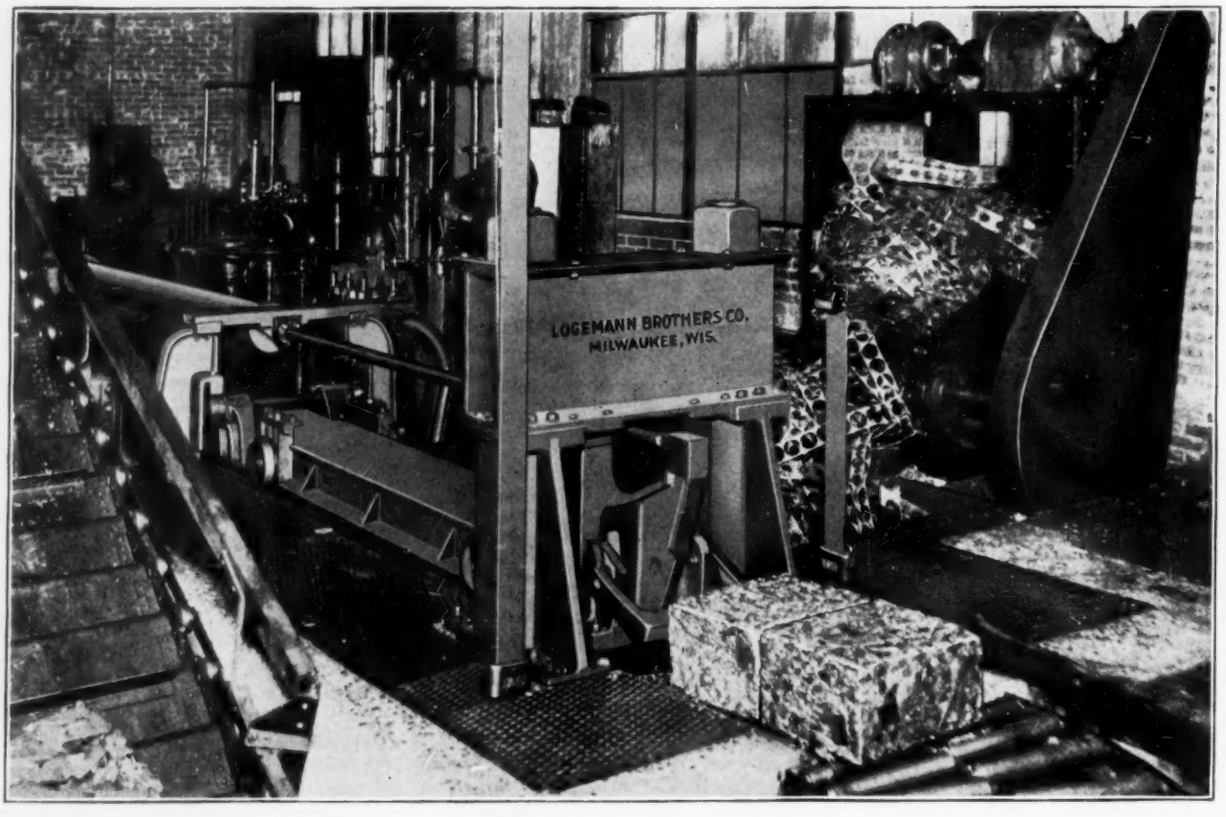
Hydraulically-compressed scrap commands at all times the best price - - can be more economically handled - - can be readily held for favorable markets.

Baling practically eliminates corrosion - - saves much heat in remelting - - permits easy loading of scrap cars to capacity.

The installation below is in a plant making automotive electrical equipment. Scrap comes to the baling room over the horizontal conveyor at the right, is caught by the hopper, while press is finishing a bundle, then automatically charged into press. Press cover shoves the finished bundles to the rollers carrying them to the inclined apron-conveyor at the left, this discharges directly into gondola-car outside.

Our Engineering Department, with years of experience on installations of all kinds, is at the service of interested scrap-producers. Write us.



LOGEMANN BROTHERS COMPANY

3126 W. BURLEIGH STREET — MILWAUKEE, WISCONSIN

BRANCH OFFICES IN ALL PRINCIPAL CITIES

Scrap

Dull Conditions Prevail in Face Of Light Supply—Melters Take All Contract Tonnages Readily

Chicago—Scrap is in a dull market, new sales being light. Mills show little interest in additional tonnages in view of present operating schedules and the size of stocks on hand. Small consumers also are less active in buying despite a slight increase in consumption. Shipments against orders to mills are well maintained. Prices generally are steady, offerings at present quotations being light. Railroads are slow to dispose of scrap accumulations, some of which are heavy. Heavy melting steel continues $5.75 to $6.

Boston—Scrap shipments by water to the Delaware river district are slightly heavier, but offering prices still are too low for substantial business for shipment outside New Eng-

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	5.50 to 6.00
Boston, dealers	3.50 to 3.75
Buffalo, No. 1	7.50 to 8.00
Buffalo, No. 2	6.25 to 6.75
Chicago	5.75 to 6.00
Cleve., No. 1	7.50 to 8.00
Cleve., No. 2	6.50 to 7.00
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.50 to 5.00
E. Pa. del. mill	7.00 to 7.50
E. Pa., No. 2 del.	5.50 to 6.00
N. Y. deal. R. R.	4.75 to 5.00
N. Y. deal, No. 2	3.50
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	9.25 to 9.75
St. L. No. 1 sel.	6.00 to 6.50
Federal, Ill.	5.50 to 6.00
Granite City, Ill.	5.00 to 5.50
Valleys, No. 1	10.00 to 10.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.75
Chi. (Factory)	4.25 to 4.75
Cleveland	7.00 to 7.50
Detroit, dealers	5.50 to 6.00
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	9.00 to 9.50
Valleys	9.00 to 9.50

BUNDLED SHEETS

Buffalo	4.25 to 4.75
Cinci., del.	4.25 to 4.75
Cleveland	5.00 to 5.50
Eastern, Pa.	5.00
Pittsburgh	8.00 to 8.50
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	2.00 to 2.50
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	7.50 to 8.50
Boston, dealers	4.00 to 4.50
Buffalo	9.50 to 10.00
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	8.50 to 9.00
Cinci., del.	9.00 to 9.50
Detroit, deal.	8.00 to 8.50
Pitts. (open-hearth, 3 ft. and less)	10.50 to 11.00
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.50 to 6.00
Boston, dealers	2.50 to 3.00
Buffalo	7.75 to 8.00
Chicago, net	5.75 to 6.25
Cinci., deal. net	3.50 to 4.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.50 to 7.00
Eastern Pa.	9.00 to 9.50
Pittsburgh	9.50 to 10.00
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	10.50 to 11.00
Pitts., sheet bar crops	11.00 to 12.00

FROGS, SWITCHES

Chicago	6.00 to 6.50
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	5.75 to 6.00
Cleveland	6.25 to 6.50
St. Louis	5.00 to 5.50

RAILROAD WROUGHT

Birmingham	5.00 to 5.50
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Cinci., No. 2	5.75 to 6.25
Chi., No. 1, net	5.00 to 5.50
Chicago, No. 2	5.75 to 6.00
Eastern Pa.	7.00 to 7.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	9.25 to 9.75
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	5.00 to 5.50

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	6.25 to 6.75
Chicago, No. 1	4.50 to 5.00
Cinn., No. 1 dl.	4.00 to 4.50
Cinn., No. 2	2.50 to 3.00
Cleve., No. 2	3.00 to 3.50
Det., No. 1 new deal	4.75 to 5.25
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.50 to 9.00

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	0.75 to 1.00
Buffalo	3.75 to 4.25
Chicago	3.00 to 3.50
Cin., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit	3.00 to 3.50
Eastern Pa.	3.50 to 4.00
N. Y., deal	1.35 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	1.50 to 2.00
Valleys	7.00 to 7.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	.75 to .90
Buffalo	3.75 to 4.25
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.25 to 3.75
Eastern Pa.	3.00 to 3.50
N. Y., deal	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	5.50 to 6.00
Boston, dealers	1.00 to 1.25
Buffalo	4.25 to 4.50
Chicago	4.00 to 4.50
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	3.25 to 3.75
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	8.00 to 10.50
N. Y., deal	1.00 to 1.50
Pittsburgh	6.50 to 7.00
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.00 to 4.50
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	5.50 to 6.00
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	4.00 to 4.50

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	7.00 to 7.50
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal.	6.00 to 6.50
Buffalo	6.50 to 7.00
Chi., elec. fce.	5.00 to 5.50
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.00
Pittsburgh, O. H.	8.00 to 8.50
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	9.00 to 9.50
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Eastern Pa.	14.50
St. Louis	9.00 to 9.50

SHAFTING

Boston, ship. pt.	6.50 to 7.00
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	11.00 to 12.00

CAR WHEELS

Birming., iron	6.50 to 7.50
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	7.00 to 7.50
Chi., rolled steel	6.50 to 7.00
Cincinnati iron	6.25 to 6.75
E. Pa. steel	9.00 to 10.00
E. Pa. iron	9.00 to 9.50
Pitts., iron	8.50 to 9.00
Pitts., steel	9.50 to 10.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	7.00 to 7.50

NO. 1 CAST SCRAP

Birmingham	6.50 to 7.00
Buffalo (Mach.)	10.00 to 10.25
Buffalo, cupola	9.00 to 9.25
Boston, textile	7.00 to 7.50
Boston No. 2	3.00 to 3.50
Chi., mach. net	6.50 to 7.00
Chi., railroad, net	6.00 to 6.50
Chicago, agri., net	5.00 to 5.50
Cinn., mach. cup.	7.00 to 7.50
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00 to 9.50
N. Y., cup. deal.	5.50 to 6.50
N. Y., del. local foundries	8.00 to 8.50
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	4.00 to 4.25
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.75 to 7.25
Cleve., break	4.50 to 5.00
Detroit, auto, net deal.	7.00 to 7.50
Det., break., dl.	5.00 to 5.50
Eastern Pa.	8.50 to 9.00
N. Y. No. 1, dl.	5.00 to 5.50
N. Y. break, dl.	4.75 to 5.25
Pittsburgh	8.25 to 8.75

MALLEABLE

Boston Consum.	7.50 to 8.00
Buffalo	7.50 to 8.00
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	6.50 to 7.00
Cinci., R. R., del.	7.50 to 8.00
Cinci., agri. del.	7.00 to 7.50
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 5.50
St. Louis, rail	4.50 to 5.00

RAILS FOR ROLLING

5 feet and over

Birmingham	7.00 to 7.50
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	7.00 to 7.50
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.25 to 7.75

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

Chicago	8.00 to 8.50
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	11.00 to 11.50

land by rail. No. 2 steel brings $2.75 from dealers with No. 2 cast strong at $3.75. Textile grades are firm and the supply not large. For local delivery $7.50 has been paid.

New York—Scrap prices are steady and unchanged. Shipments are moderate, eastern plate mills as a rule taking scrap steadily, but not in large volume. No. 1 steel brings $5, barge, for water shipment and $4.75 is paid in New Jersey for rail movement.

Philadelphia—Scrap buying again is light, with prices unchanged. Sentiment is less strong than a fortnight ago, but prices in the absence of any test have held. Bids close at the Philadelphia navy yard Oct. 26 on 1250 gross tons of ferrous scrap and 220 tons of miscellaneous nonferrous and at the Washington navy yard 110 tons of scrap steel and 215 tons of nonferrous scrap, mostly brass.

Buffalo — Dealers claim scrap is scarce, and that major tonnages could not be bought in this district within quoted ranges. They contend a tonnage purchase of No. 1 heavy melting steel would force prices upward to $8.50 but consumers apparently are not ready to buy at any price. No. 1 machinery cast is in fair demand with sales at $10 to $10.25.

Pittsburgh—Contracts continue to provide the basis for present transactions in iron and steel scrap and the promises of last mid-week for fresh buying by a leading mill have been postponed until at least this week. In view of the placing of 500 tons of the Baltimore & Ohio railroad's list at somewhere around $9.25 and a lower price than last month on the Pennsylvania railroad's list, which is believed to have been around or perhaps under $10, the market on No. 1 heavy melting steel may best be represented at $9.25 to $9.75. In spite of this slight reduction the market shows no marked weakness as $9.75 and $9.35 orders placed several weeks ago are being covered at about 10 to 15 cents under the levels of a week ago. Some round tonnages of hydraulic compressed sheets continue to be offered at around $9.25 and there were few small transactions in blast furnace material last week at a minimum of $6.50, thus making the market on the latter at a minimum of that figure. City controller of Pittsburgh receives bids until Oct. 17 for the sale of approximately 4000 tnos of cast iron and steel scrap.

Cleveland—Some releases on orders for various grades of iron and steel scrap having just come out here, some small shipments are being made, including blast furnace material to Otis Steel Co. and miscellaneous grades to other local consumers, including cast and malleable in small quantities. Prices are steady.

Detroit—While activity in the iron and steel scrap market has lessened, the undertone continues strong and any new buying would move the market up $1 a ton, dealers believe. Adjustments in quotations this week include 25 cent advances in short shoveling turnings, cast borings, and mixed borings and turnings. Production of scrap in October, in this district, will probably exceed that of September by a small margin.

Cincinnati — New mill buying of scrap is confined to moderate tonnages, but demand continues strong and quotations firm. Scarcity serves to make the price trend upward rather than urgent demand from consumers.

St. Louis—While iron and steel scrap prices are firm at the recent advances, buying activity is low and both buyers and sellers are disposed to mark time. There have been several inquiries for heavy melting steel and steel specialties, but figures mentioned were below the views of sellers, and no business has been closed. There is a fairly steady movement of small lots and melters are taking in all quotas due on contracts, with anticipations requested in some cases.

Birmingham, Ala.—New business is in small lots and an aggregate no greater than for months. Prices are unchanged. Larger producers are not disposing of scrap because of low prices.

Toronto, Ont.—While trading in iron and steel scrap generally is dull, special grades are in fair demand. Dealers report a steady movement in machinery cast and offer $9 to $10 for supplies, which are scarce. Stove plate also is in limited supply with offerings of $7 to $8. Steel grades are largely at a standstill, although some demand has recently appeared for wrought iron and steel axles for which dealers are paying $6 to $7 per gross ton. Heavy melting steel and turnings are dull, dealers quoting $2 for turnings and $7 for heavy melting steel. Prices are slightly firmer, but quotations have not been changed.

Ferroalloys Unchanged

Ferroalloy Prices, Page 56

Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $25, furnace, with specifications so far this month at a rate comparable to that of September. Ferromanganese also is unchanged at $68, duty paid, in car lots, with shipments maintained at the recent rate.

Electro Metallurgical Sales Corp., New York, is low on 2000 pounds of ferrosilicon for the Panama canal commission.

Wire Orders Hold Rate And Prices Are Firm

Wire Prices, Page 47

Chicago — Specifications for wire products are well maintained and recent shipments hold at about the rate of the preceding several weeks. Prospects are regarded as favorable for additional demand for manufacturers' wire during October, although wire products still are moving at a restricted rate in agricultural districts, despite a moderate improvement recently. Prices are holding fairly well at $2 in carloads for wire nails and 2.25c for plain wire.

Worcester, Mass—Improvement in wire buying is slow, but for some weeks has been steady. Demand is broader and some limited orders are being taken from usually steady consumers who have been practically out of the market for several months. Prices are firm and unchanged at 2.30 on plain wire.

Philadelphia — Following some quarterly buying late in September, the market on wire products has slowed, with prices unchanged at $1.95, Pittsburgh, for nails, and 2.20c, Pittsburgh, for plain bright wire.

Pittsburgh — Fewer orders from jobbers for wire products limits a gain in wire mill specifications. The price situation is well observed, with consumers paying 2.20c for plain wire and a minimum of $1.95 for keg lots of nails.

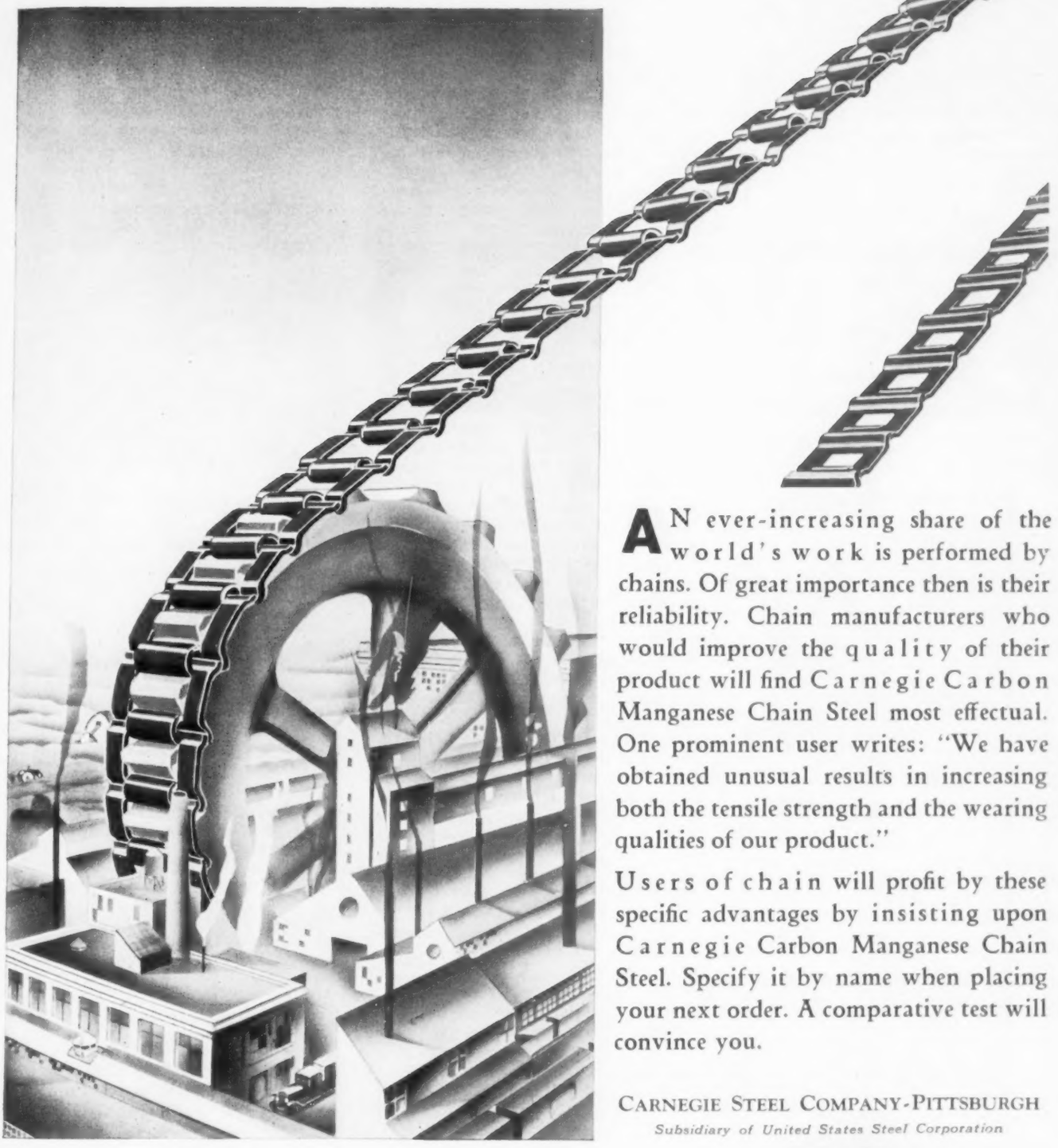
Cleveland—Wire orders are improving slowly, but individually are small. Manufacturers' requirements are broadening.

Treasury Grants Drawback

Washington—The treasury department has announced the allowance of a drawback on molybdenum wire manufactured by the American Electric Metal Corp., Lewiston, Me., with the use of imported molybdenum rods.

In August France imported from the United States sheet, plate and metalworking machinery valued at $254,263.

CHAIN



AN ever-increasing share of the world's work is performed by chains. Of great importance then is their reliability. Chain manufacturers who would improve the quality of their product will find Carnegie Carbon Manganese Chain Steel most effectual. One prominent user writes: "We have obtained unusual results in increasing both the tensile strength and the wearing qualities of our product."

Users of chain will profit by these specific advantages by insisting upon Carnegie Carbon Manganese Chain Steel. Specify it by name when placing your next order. A comparative test will convince you.

CARNEGIE STEEL COMPANY-PITTSBURGH

Subsidiary of United States Steel Corporation

CARNEGIE

201

CARBON MANGANESE STEELS

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

SHEETS	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
RODS	
Yellow brass (high, full turning)	10.25
Naval brass	11.37½
ANODES	
Copper, untrimmed	12.25
WIRE	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	3.00 to 3.25
Chicago	3.25 to 3.50
Cleveland	3.00 to 3.25
St. Louis	2.50
HEAVY YELLOW BRASS	
New York	2.00 to 2.25
HEAVY COPPER AND WIRE	
New York	3.87½ to 4.12½
Chicago, No. 1	3.75 to 4.00
Cleveland	3.50 to 3.75
St. Louis	2.75
COMPOSITION BRASS BORINGS	
New York	2.87½ to 3.12½
YELLOW BRASS TUBING	
Cleveland	2.00 to 2.25
LIGHT COPPER	
New York	3.50 to 3.75
Chicago	2.75 to 3.00
Cleveland	3.00 to 3.25
St. Louis	2.50
LIGHT BRASS	
Chicago	1.75 to 2.00
Cleveland	1.50 to 1.75
St. Louis	1.50
LEAD	
New York	2.25 to 2.37½
St. Louis	2.25
ZINC	
New York	1.12½ to 1.37½
Cleveland	1.00 to 1.25
St. Louis	1.25
ALUMINUM	
Clippings, new, soft, Cleve.	9.00 to 10.00
Clippings, hard, Cleveland	7.50 to 8.50
Borings, Cleveland	3.00 to 3.50
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, St. Louis	3.00 to 3.25

Secondary Metals

Remelt aluminum No. 12	7.50 to 8.50
Brass ingot, 85-5-5-5	6.25

Metals

Lead More Active and Quoted Higher — Copper Firm — Tin and Zinc in Quiet Market

New York—Partial recovery in lead featured the metals last week. Most classifications held steady with the exception of zinc. Uncertainty as to the political situation and declines in securities and commodities tended to dampen buying interest.

Copper—Producers held their quotations on electrolytic metal firmly to 6.25c, Connecticut, for delivery through first quarter of 1933 and showed no tendency to force the metal on a reluctant market. Only small orders appeared in the market from day to day. Fabricators continued in a well-covered position in view of the small amount of business which they have been receiving.

Lead—Consumers entered actively into the market during the early part of the week. Prices, as a result, recovered much of the losses sustained in the preceding week. One large interest took business at a premium over the published quotation of the American Smelting & Refining Co. during the first three days of the month, which strengthened the market. A substantial tonnage was booked mostly for November requirements but consumers also were active in covering on the remainder of October needs. Demand slowed down later in the week, however, and prices were cut $2 a ton.

Zinc—Stocks of slab zinc showed a further large reduction in September, making the statistical position of the market the best since the middle of 1930. Business during the week, however, was extremely light. Efforts on the part of some sellers to book business resulted in lower quotations. Early in the week some metal was booked at 3.05c, East St. Louis. Later metal could be had freely at 3.07½c.

Tin—Fluctuations in tin were confined to a narrow range, largely following the trend in London, but also reflecting the situation in the commodity and security markets in this country. Consumers continued to show little interest. World visible supplies of tin increased 622 tons in September but remained relatively favorable.

Antimony—Prices were steady with demand dull.

Aluminum—Sales were light and prices steady.

Naphthalene Contract Prices Named; Sulphate Up

New York—New prices for naphthalene contracts are announced as 4.75c in carload shipments, smaller lots ranging to 5.75c. The 1.00c range between flake and balls is eliminated, both being quoted the same. Spot business is light, and it is too early for contracting for next year. The distillate group has a firmer tone, with volume slightly heavier, notably toluol. October price for sulphate of ammonia is $21 a ton, Atlantic seaboard, a slight rise.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$1.05

Quicksilver Steady

New York—Quicksilver prices are unchanged with $47, a virgin flask, quoted on round lots, and $48 a flask on small lots, for prompt delivery.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper, Electro delivered	Copper, Lake delivered	Copper, Casting refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Oct. 1	6.25	6.37½	6.00	24.50	24.80	3.07½	2.92½	3.15	22.90	5.62½	35.00
Oct. 3	6.25	6.37½	6.00	24.20	24.50	3.12½	3.00	3.10	22.90	5.62½	35.00
Oct. 4	6.25	6.37½	6.00	24.50	24.80	3.27½	3.10	3.10	22.90	5.62½	35.00
Oct. 5	6.25	6.37½	6.00	24.30	24.60	3.25	3.10	3.07½	22.90	5.62½	35.00
Oct. 6	6.25	6.37½	6.00	24.10	24.40	3.25	3.10	3.07½	22.90	5.62½	35.00
Oct. 7	6.25	6.37½	6.00	24.00	24.30	3.15	3.00	3.07½	22.90	5.62½	35.00

Equipment

Start of Railroad Repair Work May Require Tools

Pittsburgh—Inquiry is expected from the Youngstown Sheet & Tube Co. for conduit finishing machinery to be used in its department which was destroyed by fire a week ago. It had been proposed to change equipment in this department for some time. Equipment inquiry in general was moderately better in September in the respect that it forecasts some actual orders before the year is out.

No equipment has been purchased for car repair work which is being resumed at Pennsylvania, Pittsburgh & Lake Erie, Bessemer & Lake Erie, and other railroad shops in this district. There will probably be no shop machinery purchasing either for the Altoona, Pa., shops of the Pennsylvania railroad where some of the work to build 1285 box cars is expected to be allocated. Revised prices have been submitted for several machine tools to be shipped to a Sharon, Pa., manufacturing unit.

New York—Outside of government inquiry, most of which is in the West, inquiry for machinery is light. Sales and inquiry are generally for one or two tools at a time, although there has been some gain in the call for parts. While railroads have been buying little for a long period, reopening of such shops in the East and proposed repair programs are expected to result in the purchase of a few badly needed tools.

Worcester, Mass.—Improvement in demand for machinery is slow. While most shops are operating on short schedules, a few report spotty improvement. Demand for parts is gaining and some textile mill equipment builders continue to feel the effects of pick-up in that industry.

Cleveland—Volume of business which sellers of machine tools and other equipment are transacting has shown no further gains over the past week. Inquiries are widely scattered and cover no large lists. Urgent replacement needs are accounting for some orders, but little of the recognized pent-up demand has been released.

Chicago—While sales of machine tools and plant equipment are improving, additional signs of interest in purchases on the part of users are noted only gradually. Some railroads are issuing inquiries for the purpose of making up first-quarter budgets and although purchases by the carriers are expected to continue light over the balance of the year, the almost complete absence of buying by this group during the past two years is expected to be compensated for next year if general conditions show definite improvement.

Inquiry generally shows but slight change, with a fair volume of business pending as a result of inquiries issued over the past several months. A number of used tools have been purchased by an organization planning to engage in the production of electric refrigerators here shortly. Activity in used equipment has been fair. The farm implement industry has made but few purchases of tools and other equipment, although some buying is looked for on the part of a few interests.

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GRAVER manufacturing and fabricating facilities in steel plate up to 2 in. thick are unexcelled while production costs are low. Fabrication is from your specification or will be designed completely to your needs by our engineering department specializing in welded construction. GRAVER engineers work closely with you from the proposal of your work until the completed construction is turned over to you in operating condition. We fabricate also nickel clad steel, stainless steel, aluminum and other special alloys. Estimates and recommendations submitted gladly.

Vulcalock Rubber Lined Tanks

Through contract with the B. F. Goodrich Rubber Company, we manufacture under their patent tanks and steel plate with vulcanized gum rubber lining.

GRAVER TANK & MFG. CORP.
East Chicago, Indiana

Manufacturers and Erectors—Special Steel Plate Construction—Water Conditioning Equipment

Europe

Better Tone in Britain, Trade Showing Expansion—Continent Has Heavier Orders

London—(By Cable)—Trade in steel and iron is expanding slightly and a more hopeful tone pervades the situation, but there is no expectation of great activities at once. Competition of Indian pig iron with the output of Scottish furnaces continues to trouble the latter. Prices of galvanized sheets have been increased one shilling, owing to higher spelter.

Reports from the Continent show an uneventful market with prices firm and order books better filled. Berlin reports American competition on wire rods in the Far East has been stopped for the time being.

Pacific Coast

Inquiry Light with Prospect For Heavier Buying

San Francisco—*(By Air Mail)*—Activity in Pacific coast iron and steel markets this week was not pronounced and few new inquiries of importance developed. The structural shape market was the most active, over 2000 tons being placed. Included among the larger tonnages booked were 780 tons for the army air base at Government Island, Calif., secured by McClintic-Marshall Corp. A new inquiry calls for over 700 tons of reinforcing steel bars for highway works in Los Angeles county, Calif., for the state. Prices continue to hold to established levels.

It is thought that over 20 major western federal building projects costing $7,500,000, will shortly be released for figures. The largest of these involves $2,745,000 for a federal office building in San Francisco.

Pacific Coast Steel Corp. booked 180 tons of reinforcing bars for four bridges in Los Angeles county, California. Unnamed interests took 151 tons for bridges in Shasta and Monterey counties, California. Bids open Oct. 19 for two highway projects in Los Angeles county, involving 495 tons and 235 tons, respectively. Los Angeles and San Francisco out-of-stock prices are firm at 2.50c, base, on carload lots. Merchant bar material holds at 2.10c, c.i.f.

Demand for plates continues spotty. The only inquiry of size pending calls for 600 tons for 85 helium tanks for the Sunnyvale, Calif., dirigible base, bids on which open Nov. 2. Prices are general at 2.00c, c.i.f.

Structural material continues in good demand, though fabricated prices are still extremely low. The Consolidated Steel Corp. took 120 tons for gates for the Pine Canyon dam, Pasadena, Calif., while McClintic-Marshall Corp. booked 775 tons for four bridges in Los Angeles county for the state. Unnamed interests took 280 tons for two bridges in Montana and 156 tons for six bridges in Oregon United States Engineer office, Portland, Oreg., will open bids Oct. 27 for over 400 tons, including 300 tons of rails, for a jetty on the Umpqua river in Oregon. Bids have been opened on 195 tons for a bridge over Muddy creek, Nevada.

Deer Lodge, Mont., has placed the general contract for 1000 tons of 2 to 10-inch Class 150 cast iron pipe with Lease & Leigland, Great Falls, Mont. The United States Pipe & Foundry Co. secured 125 tons of 4 to 6-inch Class 150 pipe from Redwood City, Calif.

Financial Aid Awaited

Seattle—Inquiry for iron and steel products is somewhat more active in the Pacific Northwest. Many important projects are awaiting financial support. Multnomah county commissioners at Portland, Oreg., have issued an order that the use of foreign steel or iron in the Sandpoint bridge will not be considered.

Awards this week approximated 500 tons of shapes, concrete bars and cast iron pipe. Washington Iron Works, Seattle, which is entering the fabricating field, took 125 tons of shapes and 15 tons of machinery for the state Deep River bridge, Wahkiakum county, Washington. Unstated interests have booked 128 tons of shapes and 27 tons of concrete bars for St. Mary's river bridge, Corvallis, Oreg. Northwest Steel Rolling Mills, Seattle, will furnish 80 tons for three state concrete spans in Columbia county, Washington, while 38 tons for federal road work in Yakima county went to unnamed interests in Portland, Oreg. United States Pipe & Foundry Co., Burlington, N. J., has the contract to furnish Seattle water department 100 tons of 20-inch centrifugal cast iron.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Oct. 6

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$10.12	2 18 6	$ 8.76 to $9.25	1 16 0 to 1 18 0
Basic bessemer	9.34	2 14 0*	6.81	1 8 0
Hematite, Phos. .03-.05	10.38	3 0 0	.....	.....
SEMIFINISHED STEEL				
Billets	$16.87	4 17 6	$9.49	1 19 0
Wire rods, No. 5 gage	25.95	7 10 0	21.90	4 10 0
FINISHED STEEL				
Standard rails	$26.82	7 15 0	$26.77	5 10 0
Merchant bars	.94c	6 2 6	.53c	2 8 6
Structural shapes	1.14c	7 7 6	.46c	2 2 0
Plates, †¼ in. or 5 mm.	1.35c	8 15 0	.62c to .63c	2 17 0 to 2 17 6
Sheets, black, 24 gage or 0.5 mm.	1.23c	8 0 0	1.21c to 1.24c	5 10 0 to 5 12 6
Sheets, gal., 24 gage, corr.	1.54c	10 0 0	1.49c	6 15 0
Bands and strips	1.19c	7 15 0	.66c to .69c	3 0 0 to 3 2 6
Plain wire, base	1.46c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.77c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.69c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.77	0 16 0	$3.20	0 13 2

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$10.12	2 18 6	$ 8.04	205(2)	$ 8.48	305	$16.41	69
Basic bessemer pig iron	9.34	2 14 0*	6.86	175(1)	7.65	275	17.95	75.50
Furnace coke	2.08	0 12 0	4.86	124	3.06	110	4.57	19.20
Billets	17.30	5 0 0	14.50	370	10.15	365	22.95	96.50
Standard rails	1.27c	8 5 0	1.25c	697	1.50c	1,150	1.37c	127
Merchant bars	1.02c	6 12 6	.95c	530	.55c	420	1.19c	110
Structural shapes	1.35c	8 15 0	.99c	550	.53c	410	1.16c	107.50
Plates, †¼-in. or 5 mm.	1.39c	9 0 0	1.17c	650	.75c	575	1.37c	127
Sheets, black	1.27c	8 5 0§	1.44c	800‡	.85c	650‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.42c	9 5 0	2.83c	1,570	1.76c	1,350	4.00c	370
Plain wire	1.46c	9 10 0	2.03c	1,130	1.95c	1,500	1.92c	178
Bands and strips	1.46c	9 10 0	1.04c	580	.78c	600	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

Here and There in Industry

RIEHLE BROS. TESTING MACHINE CO., Philadelphia, and Torrington Mfg. Co., Torrington, Conn., have formed an agreement whereby the machines and instruments of the former will be built by the latter at its plant in Torrington. The Riehle company will retain its corporate identity and will continue to conduct its engineering and sales. This company has been in existence since 1825, a pioneer in physical testing equipment in this country. The Torrington company was organized in 1885 and specializes in building machinery of special nature for strip, sheet, rod, tube, wire and cable mills and a variety of press and screw machine products.

□ □ □

Plykrome Corp. has moved its offices from the Transportation building, 225 Broadway, to 1 Wall street, New York, room 1702.

□ □ □

Cleveland City Forge Co., Cleveland, has appointed C. O. Cromwell its sales representative in the Detroit area, with offices at 607 Stephenson building, Detroit.

□ □ □

Baldwin Locomotive Works, Philadelphia, and subsidiary companies, have been licensed by the Dardelet Threadlock Corp., New York, to manufacture for their own use bolts, nuts and other parts threaded with Dardelet self-locking thread.

□ □ □

Dries & Krump Mfg. Co., Chicago, has appointed the ParKett machinery division of the Austin-Hastings Co. Inc., Cambridge, Mass., its exclusive distributor for power brakes, power presses and power shears, covering New England except Connecticut.

□ □ □

Lebanon Steel Foundry, Lebanon, Pa., has been licensed by the Carpenter Steel Co., Reading, Pa., to manufacture anti-friction corrosion-resisting steel under Frank R. Palmer's patent No. 1,835,960 and corrostion-resisting steel under his patent No. 1,846,140, in the production of stainless steel castings embodying the use of selenium and sulphur.

□ □ □

Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., has acquired full ownership and direct management of the C. G. Buchanan Co., 90 West street, New York., designer and builder of crushing and concentrating machinery. The purchase includes patterns, drawings and goodwill. All manufacturing will be done at Birdsboro, and the Birdsboro company claims it is the only manufacturer of this class of equipment operating its own steel foundry. A New York office at 90 West street will be in charge of George H. Keppel.

□ □ □

Bryant Machinery & Engineering Co., 400 West Madison street, Chicago, has appointed J. B. Whitenack exclusive railroad representative covering all railroads in the Chicago district. For several years he was on the railroad sales staff of Joseph T. Ryerson & Son Inc., Chicago. His headquarters will be with the company at the above address.

□ □ □

North Jersey Iron & Steel Co. is a new firm at 300 Utica Street, Jersey City, N. J., doing a general jobbing business in iron and steel products, including reinforcing bars and mesh. J. J. Jones, formerly an executive with the Tidewater Steel Co., New York, is general manager and acting president of the new company, which operates a fabricating shop and warehouse at the Jersey City location.

Business News Of Washington

(*Concluded from Page* 14)

Philadelphia; Union Shipbuilding Co., Baltimore, $1.06 per gross ton for recoverable material; and Boston Iron & Metal Co., Baltimore, $1.51 per gross ton of recoverable material.

□ □ □

The customs bureau has renewed its ruling of Aug. 23 that certain steel window shapes are "structural shapes" within the meaning of paragraph 312 of the present tariff law.

However, says the bureau in a communication to the collector at New York, "it appears from information now before the bureau that it is the present practice to assess duty on this merchandise under paragraph 312, and you are, accordingly, authorized to continue this practice on all merchandise entered for consumption or withdrawn from warehouse for consumption within 30 days after the date this letter appears in the weekly treasury decisions."

□ □ □

Commissioner of internal revenue has ruled that electric power consumed in iron and steel scrap yards is commercial and not industrial and hence is subject to the 3 per cent tax on electrical energy imposed by the new revenue law. The Institute of Scrap Iron and Steel, New York, is appealing from this ruling.

□ □ □

Interstate commerce commission has denied railroads the authority to establish carload rates on iron and steel from the Chicago district to Milwaukee without observing the long and short-haul provisions of the interstate commerce act.

Products in Metal Show Meet Challenge of Depression

(*Concluded from Page* 37)

the first time. Another device utilizing a whirling neon tube employs the magnetic principle of detecting defects and changes in properties of steel specimens. The piece inspected is compared to a standard specimen and if the former differs from the latter the neon tube illuminates.

A pocket microscope for use by the metallurgist, chemist, and salesman in field work attracted attention. It is shaped like an oversized fountain pen equipped with a clip. This trend toward compactness was exemplified in a laboratory model for examination of metals. Equally interesting was a photoelastic polariscope for observing and measuring stresses in structural members.

A universal testing machine of 2000 pounds capacity for testing fine wire, strip steel, etc., was another new unit appearing for the first time. New features characterized the design of a recently improved dynamic balancing machine for correcting crankshafts, rotors, etc. A spectrograph which rapidly is gaining recognition as a valuable piece of equipment for the analytical laboratory was one of the attractions.

A proportioning electric motor control system featured one display. Through the utilization of this system is gained a close regulation of temperature, pressure, humidity, furnace atmospheres, liquid level, stoker feeds, etc. Design developments were evident in the turbine type compressors which supply large volumes of air at low pressures for oil and gas-fired furnaces, ovens and similar equipment.

Among the protective coatings on display was one for application to aluminum to safeguard it against action of plaster, cement, dirt, weather, especially where the air is apt to contain sulphur from smoke. The coating may be applied by spraying, brushing or dipping to aluminum sheets or parts at the point of manufacture. The electro-tinning process, another coating to resist atmospheric corrosion, comprises an alkaline bath and is featured by ease of control and production of smooth, white plate.

Construction and Enterprise

New England

TORRINGTON, CONN.—Torrington Mfg. Co. has taken over the manufacture of the machines and instruments of the Riehle Bros. Testing Machine Co., Philadelphia, construction to be done in the shops at Torrington. The Riehle company continues its engineering and sales departments unchanged.

BOSTON—Lever Bros. Co. is planning an addition to its building at 164 Broadway, Cambridge, Mass., 31 x 81 feet, three stories, steel and concrete. Charles T. Main Inc., 201 Devonshire street, is engineer.

CHARLESTOWN, MASS.—Bureau of yards and docks navy department, Washington, has plans under way for extensions and improvements to the power plant at the navy yard here, to cost $100,000.

EVERETT, MASS.—New England Tank & Tower Co., 42 Main street, will build a 1-story plant 55 x 145 feet, to cost $30,000.

MEDFORD, MASS.—Ducharme Machine & Foundry Co., 387 Riverside avenue, has been incorporated with 600 shares no par value, by George A. Ducharme president and George E. Ducharme clerk, both of Medford, Mass.

WORCESTER, MASS.—Merrill & Usher Steel Co., 5 Arctic street, has given a general contract to E. J. Cross Co., 82 Foster street, for fire repairs to its plant.

New York

BROOKLYN, N. Y.—Irving Mfg. & Vending Co. has been incorporated with 200 shares no par value to manufacture slot machines, by R. Molinari, Astoria, N. Y.

BROOKLYN, N. Y.—Trio Water Engineering Corp. has been incorporated with $20,000 preferred stock and 100 shares no par value to carry on engineering research, by H. J. Savage, 449 West Fourteenth street, New York.

NEW YORK—Nu-Blade Co., has been incorporated with $5000 capital to manufacture razor blades, by B. Katzen, 29 Broadway.

NEW YORK—North Shore Iron & Metal Works has been incorporated with 200 shares no par value to do a welding business, by H. F. Pine, 120 Broadway.

NEW YORK—International Aluminum Foundry Co. has been incorporated to produce aluminum castings, with $20,000 capital, by E. Loebel, 251 Fifth avenue.

NEW YORK—General Iron Supply, 63 Guernsey street, will build a 1-story metal factory and repair shop 35 x 80 feet. Plans are by William Hiefer, 63 Guernsey street, New York.

NEW YORK—May Stoker Corp. has been incorporated with 100 shares no par value to manufacture heating devices, by I. H. Lutzker, 110 West Fortieth street, New York.

NEW YORK—Automatic Carburetor Mfg. Co. has been incorporated with $10,000 capital to manufacture automotive accessories, by Pfeiffer & Crames, 15 East Forty-first street.

NEW YORK—Turner Construction Co., Graybar building, has contract for a 2-story and basement addition to the plant of Kops Bros., 66 x 132 feet, reinforced concrete, on Rockaway boulevard, Ozone Park, Long Island.

YONKERS, N. Y.—Jolcrete has been incorporated with $30,000 capital and 200 shares no par value to manufacture building block machines, by J. S. Seidman, 2, Lafayette street, Yonkers, N. Y.

New Jersey

IRVINGTON, N. J.—Alloy Products Co. Inc. has been incorporated with $125,000 capital to manufacture wire specialties, by Charles L. Hughes, attorney, Jersey City, N. J.

IRVINGTON, N. J.—Koenig & Schoner Inc. has been incorporated with 100 shares no par value to manufacture metal products, by Harold W. Philhower, Irvington, N. J.

IRVINGTON, N. J.—William Stinen Mfg. Co. has been incorporated with 1000 shares no par value to manufacture metal goods and toys, by F. Stoddard, Irvington, N. J.

NEWARK, N. J.—Sun Machinery Co. Inc., 35 Van Buren street, will sell at auction its entire stock of new and used machinery tools, Oct. 25, in liquidation, and will retire from business. Samuel T. Freeman & Co., auctioneers, will manage the sale.

NEWARK, N. J.—Luxor Lamp Works Inc. has been incorporated with 50 shares no par value to manufacture electrical instruments and fixtures, by Henry Gottfried, 17 Academy street, Newark.

PERTH AMBOY, N. J.—Franklin Stove Mfg. Co., 313 State street, has been incorporated with $25,000 capital to manufacture stoves and heating devices, by Harry Lubern, Carteret, N. J.; Guido J. Brigiam, Perth Amboy, N. J.

Pennsylvania

ALLENTOWN, PA.—Cement Gun Contracting Co. has changed its name to Cement Gun Co. and has increased its capitalization from $100,000 to $205,000.

BIRDSBORO, PA.—Purchase by the Birdsboro Steel Foundry & Machine Co. of the business of the C. G. Buchanan Co., New York, manufacturer of crushing and concentrating machinery, will bring to the Birdsboro

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plant the manufacture of the entire line of the latter company, formerly done elsewhere.

BRYN MAWR, PA.—Machine shop of Herman Giersch, Lancaster street, has been destroyed by fire with loss of about $12,000.

FARRELL, PA.—City council, J. A. Franek mayor, is having plans made for a municipal waterworks, including pumping machinery and auxiliaries, to cost $400,000.

LEBANON, PA.—Lebanon Steel Foundry has taken a license from the Carpenter Steel Co. to manufacture anti-friction, corrosion-resisting steel under the patents of the latter.

PHILADELPHIA—Liberty Smelting Co. Inc. has been incorporated with $5000 capital to deal in steel and iron scrap and metals, by Belle Goldstein, 5425 Sansom street.

PHILADELPHIA—Triumph Metallic Products Corp. has been incorporated with $6750 capital to establish and operate a foundry, by Herman H. Yaffe, 2241 North Front street.

SHARPSVILLE, PA.—Valley Mould & Iron Co. has resumed operations after being shut down nearly two years, following resumption by the Shenango Furnace Co. of blast furnace activity.

Ohio

CLEVELAND — Cedar Welding Service Inc. has been incorporated with $1000 capital, by Theodore C. Polack, 22220 Detroit avenue, Rocky River, O., and Mann & Dray, 909 Schofield building, Cleveland.

CLEVELAND—Taylor & Boggis Foundry Co., I T. Kahn, president, has moved to the former plant of the Cleveland Brass & Copper Mill Co., Babbitt road and the Nickel Plate railroad. For 50 years the foundry has been on East Fifty-fifth street.

DOVER, O.—Reeves Mfg. Co. has resumed work six days a week with three 8-hour shifts instead of the four 6-hour shifts formerly employed. Additional orders have caused the enlargement of production.

LORAIN, O.—Thew Shovel Co., T. R. Miller secretary-treasurer, has increased operations 65 per cent to meet increased orders.

NAPOLEON, O.—Pressed Product Co., Napoleon, Saturn Electric Water Heater Co., Bryan, O., and Milwaukee Tool & Forge Co., Milwaukee, have been merged to manufacture a line of tools, electric water heaters and pole line hardware. Harold L. Schlesser, Fostoria, O., will be manager. A new plant will be built, location not yet decided.

NEWARK, O.—Wehrle Co. has resumed operations at its north plant, which has been idle about two years. Stove accessories are produced at this plant, including nuts and bolts, oven thermometers and minor parts. A foundry is operated.

ORRVILLE, O.—Equipment is being received for the new plant of the Quality Castings Product Co. and production is expected to be started about Nov. 1.

TOLEDO, O.—Manufacturers Steel Supply Co. has started business at 363 South Erie street, with Sam Gerson president and Fred Bratwaite general manager. Stocks of steel will be maintained.

Michigan

ALMA, MICH.—Sherod S. Noe, Mt. Pleasant, Mich., and John F. Burkhardt, Detroit, have bought the plant formerly occupied by the Duplex Machine & Tool Co., and will condition and equip it for the manufacture of oil heaters for domestic and commercial use. Foundry and machine shop will be equipped.

DETROIT—General Scrap Iron & Metal Co., 2927 St. Antoine street, has been incorporated with $10,000 capital to deal in and prepare steel and iron scrap and metals, by Isadore Gallow, 2221 Calvert avenue, Detroit.

HOWELL, MICH.—Spencer-Smith Machine Co. William McPherson Smith secretary-treasurer, has resumed production to build up depleted stocks drawn on heavily by jobbers. Increased automotive demand will cause immediate enlargement of activities by this plant.

JACKSON, MICH.—Reynolds Spring Co., Charles G. Munn president, has booked more than $1,000,000 worth of new orders and has several times that value in pending inquiries likely to be closed soon.

KALAMAZOO, MICH.—Rhodes Safety Razor Co. has been incorporated with 50,000 shares no par value to manufacture safety razors and blades, by Harold H. VanKeuren, 1004 Bank of Kalamazoo building.

Indiana

INDIANAPOLIS—Enterprise Iron Works Inc., recently incorporated, has taken over the Enterprise Iron & Wire Fence Co., which it will expand and add to its lines. (Noted Sept. 5).

Illinois

CHICAGO—Burlington Fiber Co., 1019 West Eighteenth street, has been incorporated with $10,000 capital to deal in metals and other scrap, by Maurice L. Davis, 328 North LaSalle street.

CHICAGO — Woodbridge Ornamental Iron Co., 1515 Altgeld street, has increased its capital from $10,000 to $20,000. W. J. Bell, 69 West Washington, street is correspondent.

CHICAGO—General Specialty Corp., 666 Lake Shore drive, has been incorporated with 5000 shares no par value to manufacture electrical novel-

STAMPINGS

These wheels are made from two formed cups electric welded together for use in connection with the new type low pressure tires.

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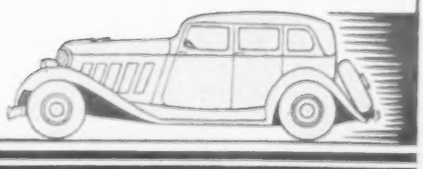
FALLS STAMPING CO.
Cuyahoga Falls, Ohio



Accuracy-Economy

ties, by Abner Sideman, 105 West Adams street.

CHICAGO — General Armature Corp., 1526 South Wabash avenue, has been incorporated with $1000 capital to manufacture electrical appliances, by Tannenbaum, Polikoff & Schmidt, 111 West Washington street, correspondents.

CHICAGO—Irving Lamp Co., 2217 West Roosevelt road, has been incorporated with $1000 capital to manufacture lamps and ornaments, by Harold Goldsmith, 127 North Dearborn street, Chicago.

CHICAGO—International Harvester Co., South Michigan avenue, is preparing to introduce a new small tractor for farms about 200 acres, production to be started about the first of the year.

FRANKFORT, ILL. — Egyptian Tool Co. Inc. has been organized to manufacture tools and other mechanical equipment.

GALENA, ILL.—Westwick & Son Inc. manufacturer of hot air furnaces, has resumed production after being closed since the first of the year. Reserve stock has been depleted and production is necessary to meet present demand.

PEORIA, ILL.—Essco Mfg. Co., 111 Harrison street, has been incorporated with $40,000 preferred stock and $10,000 common stock, to operate a machine shop and foundry, by Loren M. Comber, Edward Kett and William Krieger. Todd, Morgan, Pendarvis & Arber, Central National Bank building, Peoria, are correspondents.

ROCK ISLAND, ILL.—Gellerman Mfg. Co. plans a foundry to cost $40,000. Cervin & Stuhr, Rock Island, are architects.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will receive bids until Oct. 11 on schedule 8809 for one electric spot welder for delivery to Puget Sound navy yard, Washington.

WASHINGTON—Potomac Electric Power Co., Washington, has let contract to General Electric Co., Schenectady, N. Y., for equipment for 35,000-kilowatt unit of steam-electric power plant at Buzzards point, first unit of 200,000-kilowatt development. Stone & Webster Engineering Co., 49 Federal street, Boston, is engineer.

WASHINGTON—Bureau of supplies and accounts will open bids as follows: Oct. 18, schedule 8817, one universal armature machine and attachments, motor driven, for delivery to Puget Sound, Wash.; schedule 8824, one motor-driven milling machine and attachments; schedule 8840, one motor-driven gear hobbing machine, delivery to Norfolk, Va.; schedule 8842, one motor-driven upsetting and forging machine for delivery to Norfolk, Va.; Oct. 25, schedule 8844 two motor-driven universal turret lathes for Puget Sound, Wash.; schedule 8836, one motor-driven semi-universal turret lathe.

ANDERSON, S. C.—Appleton Mfg. Co. will make power plant alterations including new boilers, to cost $75,000.

Missouri

ST. LOUIS—Wright Airplane Co., Lambert-St. Louis field, has recalled more than 100 employes to care for orders for military and commercial planes.

ST. LOUIS — Standard Bauxite & Chemical Co. is building a new plant four miles east of Benton, Ark. to cost about $40,000. Frank Finstwhit, New York, is president, J. W. Lester mining engineer and W. E. Thompson superintendent.

ST. LOUIS—Powercraft Corp., J. P. Pohrer president, has been formed with headquarters here as a subsidiary of the Pauly Co. and has acquired the Electrical Fittings & Equipment Co., Detroit. E. O. Sessions has been retained as engineering counsel and the new company will manufacture under his patents a complete line of disconnecting switches, busbar supports and high and low tension equipment.

Wisconsin

APPLETON, WIS.—City council has been asked for appropriation of $750,000 for site and construction of an additional high school. Carrie Morgan is secretary of the board.

MENOMONIE, WIS.—Layne-Northeast Co., 1031 West Wells street, Milwaukee, has been given a contract by the water department for a 1200-gallons per minute pumping unit with 75-horsepower motor, at $3078.

MILWAUKEE—Miller Iron & Metal Corp. has been incorporated with 500 shares no par value to deal in steel and iron and other metals, by E. Hersh, attorney, Century building, Milwaukee.

OSHKOSH, WIS.—Universal Foundry Corp. has added equipment for production of brass and bronze commercial castings in addition to its gray iron, alloy and aluminum castings.

WAUSAU, WIS.—Wausau Box & Lumber Co. is having plans made for a sawmill to replace its burned mill. H. H. Scholfield is president.

Pacific Coast

PORTLAND, OREG. — Montag Stove & Furnace Works has added the manufacture of air conditioning equipment to its line of heaters and furnaces.

PORTLAND, OREG.—City council has defeated a proposition to place a $15,000,000 bond issue on the November ballot for construction of a municipal power system.

PORTLAND, OREG. — Plans have been made by Ernest Kroner, architect, 556 East Pine street, for a grain warehouse 75 x 116 feet, steel and concrete, with bins of 700 tons capacity, for the Triangle Milling Co.

CENTRALIA, WASH.—Centralia Iron Works has resumed operations after being idle several months. Coal stokers are its product.

NEWPORT, WASH.—Voters will act at the November election on a proposed bond issue for $54,000 to buy the local water system or construct a municipally-owned system.

PUGET SOUND, WASH.—Improvements at the navy yard to be inaugurated this month under a special appropriation of $562,000 include a crane and track to cost $105,000, approach to pier No. 4 $100,000 and power plant betterments, $100,000.

TONASKET, WASH.—A proposed bond issue of $31,000 will be on the November ballot for purchase and rebuilding of the local water system, involving cast iron and steel pipe.

WAITSBURG, WASH.—Waitsburg Welding Shop is building an addition to its plant, 28 x 100 feet, steel construction.

Dominion of Canada

SYDNEY, N. S.—Dominion Steel & Coal Co. has received an order for 15,000 tons of rails from the Canadian National railways, causing renewed activities in blast furnace, blooming and rail mill departments.

HAMILTON, ONT.—Metal Industries Ltd. has been incorporated with $40,000 capital to manufacture metal products, by Edgar William White, Hamilton, Ont.

HAMILTON, ONT.—Sande Heater Co. Ltd. has been incorporated with $40,000 capital to manufacture stoves, heaters and boilers, by Garry Sands, 2611 East Overlook road, Cleveland, O.

LEASIDE, ONT.—Leaside Equipment Ltd. has been incorporated with $40,000 capital to manufacture machinery, by Willard M. Gordon, Toronto, Ont.

TORONTO, ONT.—Bids are being taken by Eastern Oil Refiners Ltd., 407 Central building, for steel storage tanks and buildings for its proposed refinery at Danforth and Warden avenues.

TORONTO, ONT.—A. W. Walker Hardwares Ltd. has been incorporated with $15,000 capital and 25,000 shares no par value to manufacture hardware, by Joseph D. McNish, Toronto, Ont.

SCOTSTOWN, QUE.—Dominion Cooperage Co. plans to build and equip a plant for the manufacture of barrel staves and similar products, to cost about $50,000. Power and manufacturing equipment will be bought.

SASKATOON, SASK.—A. W. Heise & Co. Ltd., Saskatoon, has been given a general contract by Saskatoon Hi-Way Refineries Ltd. for refinery buildings on Eleventh street, including office, warehouse and boiler house. Equipment will be bought later.